

PROCEEDING ICAPFS 2018



THE 1ST INTERNATIONAL CONFERENCE
ON ANIMAL PRODUCTION FOR FOOD SUSTAINABILITY



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10-12 October 2018

Kyriad Bumiminang Hotel, Padang
Indonesia

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**THE 1st INTERNATIONAL CONFERENCE ON ANIMAL
PRODUCTION FOR FOOD SUSTAINABILITY
(ICAPFS)**

The Future, Challenges, and Strategy for Animal Production

PROCEEDINGS

ABSTRACTS

**10-12 October 2018, Kyriad Bumiminang Hotel
Padang, West Sumatra-INDONESIA**



IOP
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The Future, Challenges, and Strategy for Animal Production

PROCEEDINGS THE 1st INTERNATIONAL CONFERENCE ON ANIMAL PRODUCTION FOR FOOD SUSTAINABILITY (ICAPFS)

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Remark from Chairman of The 1st International Conference on Animal Production for Food Sustainability (ICAPFS)

Assalamualaikum wr.wb.

Dear all of the scientists, delegates, participants, ladies, and gentlemen,

*Alhamdulillah...*as the host of The 1st International Conference on Animal Production for Food Sustainability (ICAPFS), we do impress, thankful, and present a high appreciation for your participation in joining the ICAPFS 2018 in Padang, West Sumatra-Indonesia. As an international meeting for researchers, educators, professionals and students, the meeting will attract more than 100 participants with common but diverse interests in the future of animal production.

The theme of ICAPFS 2018 is “The Future, Challenges, and Strategy for Animal Production”. The livestock sector globally is highly dynamic. In developing countries, it is evolving in response to rapidly increasing demand for livestock products, largely driven by human population growth, income growth and urbanization. In the future, production will increasingly be affected by competition for natural resources, particularly land and water, competition between food, feed, fuel and fiber by the need to operate in a carbon-constrained economy. Developments in breeding, nutrition and animal health will continue to contribute to increasing potential production and further efficiency and genetic gains. Demand for livestock products in the future could be heavily moderated by socio-economic factors such as human health concerns and changing socio-cultural values. There is considerable uncertainty as to how these factors will play out in different regions of the world in the coming decades.

On behalf of ICAPFS 2018 committee and all associates, we wish all of the participants having a great achievement of success and fulfill the expectation as well as enjoying the interaction with all scientists participating in Conference.

Thank you, invited speakers and delegates, thank you for choosing to come to this conference and to “Minang” Padang-West Sumatra, Indonesia. We hope the arrangements we have put in place meet with your requirements. We wish you fruitful deliberations and an intellectuality and socially rewarding stay in Padang, West Sumatra.

We are looking forward to meeting you all in the future congress to continue.

Terimakasih, Thank you

Rusmana W.S. Ningrat
Chairman of ICAPFS 2018

Preface

Alhamdulillahirabbalamin. Great Thanks to Allah, The God of whole Universe. We are very grateful to complete the proceeding of the 1st International Conference on Animal Production for Food Sustainability (ICAPFS) was organised in Padang, on 10-12 October 2018. Conference with the theme "The Future, Challenges, and Strategy for Animal Production" is part of series programs to celebrated XI Lustrum of Faculty Animal Science.

We have selected 126 papers will be presented at oral and poster session in this conference. Excluding papers from keynote speakers, all manuscripts were reviewed by members of the scientific committee from related field. Hereafter, selected papers will publish at relevant journal in IOP Publishing, indexing by Scopus. Presenters of this conference come from Indonesia, Malaysia, Thailand, Vietnam, Japan, India and Nigeria.

This conference is a great chance for scientists, researcher, professional, private sector, policy maker from different but relevant disciplines to share valuable research finding and initiated to develop a networking and collaboration during and after the conference. Hopefully, this proceeding will be useful reference and shared information to improve animal production.

Here, we would like to express our sincere thanks to all keynote speakers for willingness to join this conference, and to steering committees for support and advice. We are very grateful to scientific committees and reviewers for contribution.

We especially like thanks to Universitas Andalas and Faculty of Animal Science for valuable support and sponsorship and to IOP Publishing for collaboration. Last but not least, we very grate full for all member of organizing committees for hard working, fully dedication and passion to make this successful conference.

For all guest and participant we are looking forward to meet you in next 2nd ICAPFS.

Padang, October 2018

Dr. Nurhayati, SPt, MM
Co-chairman 1st ICAPFS

Time Schedule

International Conference on Animal Production for Food Sustainability (ICAPFS)
Padang, West Sumatra-Indonesia, 9-12 October 2018

Time	Activities	Person In Charge	Site
October 9, 2018			
14.00-21.00	Shuttle from airport to hotel	Committee	-
18.30-20.00	Welcoming party	Committee	Lobby
October 10, 2018			
08.00-08.30	Registration	Committee	Lobby
08.30-08.40	Indonesia Raya National Anthem	Committee	R1
08.40-08.50	Opening speech (I)	Chairman of the committee	R1
08.50-09.00	Opening speech (II)	President	R1
09.00-09.15	Photo session and coffee break	Committee	R1, Lobby
09.15-12.30	Plenary Prof. Tetsuo KUNIEDA Prof. Soottawat BENJAKUL Dr. Arief DARYANTO Gustavo LASCANO, Ph.D Prof. Yetti MARLIDA	Moderator	R1
12.30-14.00	Rest, pray, lunch	Committee	Lobby
14.00-15.30	Parallel presentation I	Moderator	R1-R5
15.30-16.00	Coffee break, pray	Committee	Lobby
16.00-17.30	Parallel presentation II	Moderator	R1-R5
October 11, 2018			
07.00-07.30	Registration for excursion	Committee	Lobby
Full day	Field trips to Istano Pagaruyung, Padang Mengatas and Bukittinggi	Committee	
October 12, 2018			
08.00-08.30	Registration	Committee	Lobby
08.30-08.40	Indonesia Raya National Anthem	Committee	R1
08.40-08.50	Opening speech (I)	Chairman of the committee	R1
08.50-09.00	Opening speech (II)	Dean	R1
09.00-09.15	Photo session and coffee break	Committee	R1, Lobby

09.15-12.30	Plenary Prof. Henk HOGVEEN Prof. Nurul HUDA Dr. RUSFIDRA Prof. A.K. TIRUVENKADAN	Moderator	R1
12.30-14.00	Rest, pray, lunch	Committee	Lobby
14.00-15.30	Parallel presentation I	Moderator	R1-R5
15.30-16.00	Coffee break, pray	Committee	Lobby
16.00-17.30	Parallel presentation II	Moderator	R1-R5
17.30-18.00	Closing speech and other explanations	Chairman of the committee	Lobby
	Announcement of the best presenters	Committee	Lobby
	Closing speech and other explanation	Committee	Lobby
	Depart to Airport	Committee	

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**Oral
Presentation
Keynote Speakers**

Genetic Diversity and Hereditary Disorders of Japanese Beef Cattle

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ABSTRACT

Wagyu is Japanese original beef cattle established from local native cattle population in Japan by crosses with some European breeds. Among four Wagyu breeds, Japanese Black cattle are the most common breed which are well known as high quality beef meat showing excellent marbling traits. Therefore, local native animals are certainly important genetic resources for modern animal industry to establish unique breeds. Due to the strong demands for their meat quality, most of the breeding programs for this breed were carried out with intensive use of limited sires of a few blood lines that have high performances for the meat quality by artificial insemination. Such intensive use of limited sires has led to a considerable reduction of the effective population size and consequently increased inbreeding situation. As inbreeding situation could cause reduction of fertility and increased incidence of recessive hereditary disorders, it becomes serious problem in the breeding of this breed. Actually, occurrence of many hereditary disorders, including blood coagulation disorders and chondrodysplasia has been reported in the Japanese beef cattle. In the breeding of domestic animals, selection of economically desired traits has been the most important consideration, but excluding negative factors for animal production, such as genetic factors for hereditary disorders, is also important for the genetic improvement of breeds. To prevent incidence of the genetic disorders and to reduce allelic frequencies of the mutant genes that cause the disorders in Japanese beef cattle populations, we have identified the causative genes for the hereditary disorders. The identification of these mutations provided the basis for DNA-based diagnostic systems which can be used for identification of the carriers of these diseases, and after development of the diagnosis systems, the incidences of these hereditary disorders have remarkably decreased by applying a breeding program in which mating between carriers has been avoided. Therefore, the most effective way to prevent the incidence of the hereditary disorders is to identify mutations responsible for the disorders and to establish DNA-based diagnosis systems to avoid the mating between carriers. In this lecture, I would like to introduce our attempt to genetic control of the Japanese beef cattle to prevent hereditary disorders.

Key Words: Genetic Diversity, Hereditary Disorder, Japanese Beef Cattle

Implementation of Breeding Programme for Sustainable Livestock Production in Tropical Countries

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ABSTRACT

Livestock is an integral part of agricultural economy of tropical countries and plays a multifaceted role in providing livelihood support to the rural population. Livestock sector apart from contributing to national economy in general and to agricultural economy in particular, also provides employment generation opportunities, asset creation, coping mechanism against crop failure and social and financial security. The resource-poor small and marginal farmers and landless labourers own majority of the livestock resources. Hence sustainable development of the livestock sector would lead to more inclusive development and empowerment of women. Livestock production systems in tropical countries are mostly based on traditional knowledge, low cost agricultural residues and agro-byproducts leading to lower productivity. Of late, livestock sector in developing countries is facing newer challenges, like increased incidence of emerging and re-emerging animal diseases, vulnerability to exotic diseases, shortage of feed and fodder and need to increase production to meet demand for animal products. In general, the livestock and animal health development projects have not always led to substantial increases in animal productivity. The multipurpose functions of livestock and complex relationships between the biological, technical and social components require a systems approach, whereby nutrition, animal health, breeding, biotechnology knowhow, inputs and technologies are used to optimise resource use. The challenge for developed and developing countries is to reverse the current degradation of the environment, and arrive at sustainable increases in crop and livestock production to secure present and future food supplies. For rural development, governments should show long term commitment and political will to support the rural population in development programmes, because smallholders (including women and landless livestock keepers) represent a large labour force in developing countries. Different systems need different approaches. Pastoral systems must focus on effective management of grazing pressure of the rangelands. Pastoral communities, particularly those managing migratory animals like buffaloes, sheep, goats etc. shall be supported through creation of facilities along their migratory routes for feeding, breeding, healthcare, housing, and market channels for their produce and animals.

In order to improve the milk production in cattle and buffaloes and to increase their life time productivity, a broad framework of policy viz., Selective breeding of defined indigenous breeds of cattle having high milk yield, and those with excellent draft abilities, will be promoted to improve their production and reproduction potential. This will help their proliferation, conservation and genetic upgradation. Intrusions of crossbreeding in their defined breeding tracts will be avoided. In addition, cross-breeding of non-descript and low producing cattle with high yielding exotic breeds suitable for respective agro-climatic conditions, will be encouraged in selected areas having adequate facility for feed and fodder and marketing facilities etc. Upgradation of non-descript and low producing cattle with defined indigenous breeds in resource deficient areas and

the breeding tracts of defined indigenous breeds would be encouraged. The buffalo development will aim at improving milk production and to hasten growth, maturity and proliferation. Selective breeding of established native breeds, and upgrading low producers through breeding with defined high milk yielding breeds will be undertaken. If required, semen may also be imported to reduce inbreeding. Cross-breeding of non-descript buffalo population with improved indigenous breeds will be considered, where appropriate. Production of breeding males having high genetic potential will be an essential element of the breeding policy for each species and breed. Formation of breed associations by involving farmers for improvement of indigenous breeds of various species and identification/registration of animals having good genetic potential would be promoted by providing financial, technical and organizational assistance. The breeding policy for sheep and goats will aim to improve growth, body weight, reproductive efficiency, meat and wool quality and quantity, and to reduce mortality. An area specific approach would be adopted to improve quality and quantity of coarse wool and fine wool. Main focus will be to produce and distribute good quality rams/bucks of quality indigenous breeds which can thrive in different agro-climatic conditions. The recommended breeding policy for Pig (in pig rearing tropical countries alone) has to focus on improving growth, prolificacy, quality and quantity of meat produced, survivability and utilization of low cost locally available feed and managerial conditions. While efforts will continue to conserve some of the meritorious indigenous breeds of pigs in their defined local tracts, crossbreeding with high yielding, disease resistant exotic breeds will be encouraged, with maximum 50 per cent level of exotic germplasm in crossbreeding.

Biodiversity management in any agricultural system depends greatly on the region in which the farming takes place, and the ecosystem in which the farmer is operating. Although breeding programmes have been successful in improving productivity and resistance to some conditions, lack of genetic diversity is a potential issue within livestock farming, as inbreeding can reduce the productivity and hence profitability of animals. Hence, farmers to be aware of the genetic diversity within the herd, and work with relevant breeding programmes that aim to prevent inbreeding. Newer breeding and reproductive technologies, including those involving biotechnology and genetic engineering/genetic marker technology developed from time to time, will be adopted for faster implementation of various breed improvement programmes and for increasing production. The delivery of breeding services would be regulated by fixing standards with periodic evaluation of service providers.

Key Words: Breeding Policy, Tropical Countries, Newer Technologies

Potency of Lactic Acid Bacteria Isolated From Indigenous Fermented Food Origin West Sumatera, Its Application for Feed Additive

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ABSTRACT

Indigenious fermented food origin from West Sumatera naturally fermented without any added microbes such as: buffalo milk (*dadih*), fermented durian (*tempoyak*) and fermented fish (*budu*). Fermented buffalo milk (*dadih*) are valuable source of food for people living in West Sumatera, Jambi and Riau of Indonesia. These products are widely consumed in West Sumatera and it is an important part of *Minang Kabau* people diet. Indigenious fermented buffalo milk (*dadih*) microflora plays major fermentative role in the aroma, texture and acidity; therapeutic role on improvement of digestion properties and responsible for antimicrobials properties. *Dadih* generally can be consumed directly or with rice. At first glance this food seems unfamiliar to some Indonesian people. *Dadih* itself comes from buffalo milk which is put into a bamboo tube and closed using banana leaves. Fermented durian (*tempoyak*) is a traditional fermented condiment made from the pulp of durian. Durian flesh is mixed with salt (2.5%, w/v), placed in a sealed container, and allowed to ferment for 1 week. *Tempoyak* is often used as condiment with certain fish and vegetable dishes. *Tempoyak* typically has long shelf life because it is preserved by lactic acid produced by LAB and salt added during processing to inhibit growth of food spoiling bacteria. Fermented fish (*budu*) is a fermented fish product produced mainly in the area of Pasaman, approximately 300 km from Padang, the capital city of West Sumatra. The product is different from the Malaysian *budu*, in terms of both the fish used and the processing steps. The *budu* from West Sumatra is normally made from larger marine fish such as Spanish mackerel and leatherskin, locally known as *Ikan Tenggiri* and *Ikan Talang*, respectively.

Nowadays, the discovery of microbes from indigenious fermented food, especially LAB important research in the future, because LAB are microbes that are safety to be used in food and animal feeding, especially in the production of primer and secondary metabolic that can be used as food or feed additive, such as γ -Aminobutyric acid (GABA). GABA not only plays the role of a principal inhibitory neurotransmitter in the central nervous system, but also exhibits various nutritional and pharmacological functions, such as the induction of diuresis, a blood pressure-lowering effect, promotion of the absorption of metal ions, tranquilising effects, protecting the liver against alcohol damage, and immunomodulatory effects. Previous studies in our laboratory showed that GABA can improve the production performance of heat-stressed broilers. In the livestock sector, GABA improves feed intake and weight gain in growing pigs and weanling pigs, and decreases sow weight loss in lactation, GABA has beneficial effects to improvement of feed intake, lactation performance, and animal health in dairy cows during early lactation.

Key Words: Indigenous Food, LAB, GABA, Broiler, Heat Stress

Nutritional (Protein) Evaluation of Food Products

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ABSTRACT

The main criteria in Nutritional evaluation of food products, especially animal based products is related with the determination of protein quality. Methods for determination of protein quality can be either simple and rapid or complex and time consuming. In general we can classified method for protein quality determination by three methods there are chemical, in vitro and in vivo or bioassay method. Rapid chemical methods including nitrogen and amino acid analysis. Protein content, amino acid composition, Chemical Score (CS), Amino Acid Scores (AAS) and Essential Amino Acid Index (EAAI) are the sample of rapid chemical methods. In vitro analysis involving some proteolytic enzymes to predict the availability (digestibility) of amino acids in a sample. The enzymes are used to stimulate human gastric and intestinal hydrolytic in the digestibility assay. The protein digestibility (PD) is calculated based on the proportion of solubilized protein to the total nitrogen content of the sample. In vivo or bioassay methods requires several days to weeks to complete. The samples that are to be tested are administered to the testing animals (rat) at a definite dosage regimen. This method is based on the weight changes occur during the growth phase and nitrogen retention occurs in respond to the nitrogen consumed. Protein Efficiency Ratio (PER), Net Protein Ratio (NPR), Biological value (BV), Net Protein Utilization (NPU), Apparent Digestibility (AD) are the sample of time consuming in vivo or bioassay method.

Key Words: Nutritional, Protein, Evaluation, Food Products

**Oral
Presentation**
Nutrition, Feed Science, and Technology

Fermentation Characteristic with Addition of Jengkol (*Archidendron jiringa*) Peel Powder on in Vitro

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ABSTRACT

This study was aimed to utilize jengkol (*Archidendron jiringa*) peel as a natural feed additive for ruminant livestock. Jengkol (*A. jiringa*) peel has a good nutritional content and contains of bio-active compounds (tannin and saponin) that can be potential to increase the productivity of ruminant livestock. Tannin had the function to bind protein and decreased methanogen population, and saponin had used as defaunation agent to decreased the rumen protozoa population. The treatments were arranged in a randomized block design with 4 treatments (0%, 2%, 4%, 6%) and 4 replications. The variables observed included pH value, dry matter and organic matter digestibility, and NH₃ concentration. Data were tested using Analysis of Variance (ANOVA) and the differences among treatments means were examined by Duncan Multiple Range Test. The results showed that the addition of Jengkol (*A. jiringa*) peel powder until 6% did not disturb ($P > 0.05$) pH value and digestibility (dry matter and organic matter digestibility), and strong significant ($P < 0.01$) increased NH₃ concentration. The research concluded that the addition of Jengkol (*A. jiringa*) peel powder had potency to increase livestock productivity because increased NH₃ and did not disturb pH rumen, dry matter and organic matter digestibility.

Key Words: Fermentation Characteristic, Saponin, Tannin, Jengkol Peel Powder

Biological Evaluation of Some Plant Extracts as Feed Additive to Replace Antibiotic Growth Promoters

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ABSTRACT

Antibiotic growth promoters (AGP) have been banned in many countries include in Indonesia. Therefore, many attempts are carried out to seek for the substitution of the AGP such as plant bioactives. Previous in vitro study showed that the combination of some plant extracts was effective to inhibit growth of microbes. Biological evaluation on broilers is reported. Its possibility to replace AGP in broiler diets is reported in this paper. A combination of plant extracts, i.e., liquid smoke of cashew nuts (*Anacardium occidetale*) shells, clove (*Syzygium aromaticum*) leaves and leafflower (*Phyllanthus niruri*) were reported to contain high antioxidant activities and effectively to inhibit *E. coli*, *Salmonella*, and *Aspergillus* in the previous in vitro study. The present study was designed to test the formula to replace AGP in broilers diet. Standard diets were formulated and either supplemented with antibiotic (AGP diet) or without antibiotic (Control) or plant extract (PE) in 3 (Low, Medium or High) levels. Each diet was fed to 70 birds from 1 to 35 d old and their performance were measured. Blood was taken to measure the lymphocyte, monocyte and heterophil at 34 d. The results showed that the performances (feed intake, body weight and FCR) of broilers were not significantly affected by supplementation of AGP nor by the plant extracts combination. However, the AGP and low levels PE improved body weight 3.9% and 4.6% and the FCR 1.8% and 2.7% better than the negative control, respectively. The mortality was higher (7.1%) in the control than in birds supplemented with AGP (5.7%) and low level PE (2.9%). A higher levels f lymphocyte and heterophil was found in blood of birds supplemented with AGP or low levels PE as compared with the control birds. It is concluded that low level PE could be used as feed additives to replace antibiotic in broiler diet.

Key Words: Plant Extracts, Antibiotic, Broilers, Immunity, Performance

Evaluation of Coconut Husk Potential as Phytonutrients Source for Poultry

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ABSTRACT

Many previous studies have been conducted to find natural feed additive for livestock as the application of synthetic feed additive produces risk on the animals and environment. In fact that it is necessary to find such additive from plants sources. Coconut plant grows well in tropical regions and are used for many purposes. Coconut husk, for example, has intensively been evaluated as alternative medicine. The current *in vitro* study was carried out to evaluate the potential of coconut husk as phytonutrients source for poultry. Coconut husk were collected from local market and dried in the oven. The dried materials were finely ground and the powder extracted using methanol, ethylacetate or acetone. Crude extracts from three types of solution were rotary evaporated until dry. The dry extracts were subjected to chemical analysis, antioxidant and antibacterial activity. The results indicated that extract materials consists of bioactive compounds of flavonoid, steroid, gallic acid and tannin. Antioxidant activity (IC_{50}) was 254.20, 213.20 and 243.00 ppm AEAC for methanol, ethylacetate and acetone, respectively. Extract materials produced antibacterial activity on the tested bacteria of *Escherichia coli* ($P < 0.05$) and *Staphylococcus aureus* ($P > 0.05$), The average inhibition for pathogen bacteria of *Escherichia coli* was 14.28, 14.61 and 14.63 mm for methanol, ethylacetate and acetone respectively, while inhibition for *Staphylococcus aureus* was 17.58, 15.98 and 15.81 mm for methanol, ethylacetate and acetone respectively. Therefore, it could be concluded that the crude extracts of coconut husk are potentially to be used as phytonutrients source for poultry.

Key Words: Coconut, Husk, Bioactive, Antioxidant, Antibacterial

The Effect of Biochar Utilization on First Ratoon *bmr* Sorghum Productivity as Forage Source on Swamp Soil

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ABSTRACT

The utilization of marginal soil such as swamp soil for forage cultivation was often constrained on its limitation character such as low soil pH and high of Al^{3+} which could inhibit plant growth. Biochar was one of the soil amendment agents which could improve the physical and chemical quality of the soil. Moreover, the selection of adaptive forage species to be developed on marginal soil also needed to be done. Sorghum was a cereal plant which have wide adaptability and ratoon ability 2 to 3 regeneration. This research was aimed to determine the effect of different levels of biochar utilization on the productivity and quality of first ratoon sorghum on swamp soil. The research was design based on Complete Randomized Design with 4 treatments and 4 replications. The treatments were four levels of biochar (A0: without biochar/control, A1 : 5 ton ha^{-1} , A2 : 10 ton ha^{-1} , A3 : 15 ton ha^{-1}). This research was conducted by growing first ratoon G.53 line *bmr* sorghum in 45 kg capacity polybag which applied with 4 levels of biochar in green house system. Variables measured were plant height, stem diameter, number of leaves, harvested age, individual weight, leaf ratio, obrix value, dry matter and crude protein content. The results of this study shown that addition of biochar until 15 ton ha^{-1} gave no significant effect ($P>0.05$) on first ratoon sorghum's stem diameter, number of leaves, harvested age, individual weight, leaf ratio, °brix value, dry matter and crude protein content, but gave significant effect of plant height ($P<0.01$).

Key Words: Biochar, First Ratoon Sorghum, Swamp Soil, Plant Productivity and Quality

Quality and Fermentation Characteristic of Corn Stover – Rubber Cassava (*Manihot glaziovii* M.A) Combination Silage

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ABSTRACT

Utilization of agricultural by-products as animal feed has enormous potential. The abundant availability and low prices make it a potential source of feeding commodities. However, seasonal availability and low quality of feed ingredients from agricultural waste become an obstacle to making it a quality feed with continuous availability. This research was conducted by using corn stover (CS) combined with rubber cassava leaves (RC) with different proportions (90: 0, 80:10, 70:20, and 60:30) as silage and yellow corn (CY) as additives of the remaining 10%. Silage fermented by using a 1 liter silo tube model for 21 days of fermentation. The parameters observed were silage pH, dry matter content (DM), *Fleish* point and crude protein content (CP). The results showed that the use of RC affects the pH and CP silage produced. The pH of silage becomes more acidic when there is a RC combination compared to the control due to WSC availability, as the BAL energy source substrate which enough contained in the RC. It also occurs in CP content that linearly increases (8.47-16.04) when the proportion of RC increases because RC has a high CP content. Meanwhile, the use of RC up to 30% level did not affect the content of DM silage which resulted in the perfect silage *Fleish* point (94.7-98.8). Thus, the use of RC as a CS silage combination material will be able to improve the quality of silage so as to increase the quality feed from agricultural by-products.

Key Words: Silage, Characteristic, Quality, Fermentation, *Fleish*

Supplementation Of Mangosteen Peel Flour, Turmeric Flour and Its Combination in Ration to Total Cholesterol of Cihateup Duck Meat

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ABSTRACT

Duck meat has a relatively higher cholesterol content than other poultry meat. This study aims to examine the effect of supplementation of mangosteen skin flour (MF) and turmeric flour (TF) and its combination to total cholesterol of Cihateup duck meat. Seventy-two DOD male Cihateup ducks were randomly divided into 6 treatment groups, 3 replications and 4 as repeat. In vivo study was conducted for 8 weeks by formulating MF and TF into the treatment ration group as follows: P1 (basal ration / BR as control), P2 (BR + 2% MF + 0% TF), P3 (BR + 1,5 % MF and 0.5% TF), P4 (BR + 1% MF + 1% TF), P5 (BR + 0.5% MF + 1.5% TF) and P6 (BR + 0% MF + 2% TF). Analysis of total cholesterol of meat was done by CHOD-PAP method. The treatments were designed using a Completely Randomized Design (RAL) pattern, when there is a marked difference tested further with Duncan's method. The results showed that the addition of mangosteen peel flour and turmeric flour significantly influenced ($P < 0.05$) on the decrease of Cihateup duck cholesterol level. The combination of both materials at the level of 1% TKM + 1% TK (P4) showed the best results compared to other treatments. This is because the xanthonic content contained in mangosteen peel and curcumin in turmeric both have hypolipidemic properties and more effective performance when combined. Thus, the combination of mangosteen peel flour and turmeric flour can be used as a natural feed supplement to decrease cholesterol levels of duck meat.

Key Words: Cihateup Duck, Duck Meat, Cholesterol, Mangosteen Peel, Turmeric

Carcass Weight of Broiler Given Coconut Milky Juice and Brown Sugar Water as Drinking Water

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ABSTRACT

To produce optimum carcass weight, broiler need an adequate ration which meet their nutrients requirement. This result in high feed cost which in turn increase cost of production. Therefore it is important to solve the problem by using non-konvensional feedstuff such as agriculture by product or other ingredients. The aims of this study were : 1). To examine the effect of giving coconut milky juice and brown sugar water as drinking water on carcass weight and (2). To use by product of coconut milky juice as drinking water. Experimental design used was complete randomized design, with three treatments and five replications. Each replication consists of six chicken. The treatments were P0 (ration + plain water), P1 (ration + coconut milky juice) and P2 (ration + brown sugar water). Variables measured were: voluntary feed and drinking water intakes, carcass weight and percentage. Ration offered was commercial ration BR I produced by P.T Panca Patriot Prima Sidoarjo. Chemical compositions of the ration were water content 12 %, minimum crude protein 21%, minimum crude lipid 6%, maximum crude fiber 5%, energy 3065 kcal/kg, ash 6,5%, calcium 0.9 -1.1%, phosphor 0.7 - 0.9%, antibiotic bacitracin Methylene, Disalcylate, Coccidistat Monensin. 90 DOC broilers strain CP 707 were used. An adaptation period of 7 days allowed the animals to accustom to feed given and drinking water, and followed by 5 weeks measurement period. During the experiment the animals were fed twice daily at 07.00 and 16.00 h. The animal had free access to drinking water. The amount of drinking water and feed given was recorded daily. Drinking water and feed refusals were weighed every morning before the next feeding. Parameters measured were water and feed intakes, live and carcass weight, and carcass percentage. Drinking water and feed intakes were determined by subtracting water and feed refusal from water and feed offered. Slaughtered weight were determined by weighing live animals after 10 hours fasting. Carcass weight was determined by subtracting non carcass weight from slaughtered weight. Analyses of variance were done using the General Linear Model (GLM). Least squares means and standard error were produced. Main effects were detected using LSD. Voluntary intakes were 1805.69 g, 1799.14 g, and 1806.66 g for P0, P1 and P2 respectively. The result shows that the treatments does not affect voluntary intake significantly ($P > 0.05$). However, broilers drank more ($P < 0.05$) coconut milky juice (P1/10287.2 ml), than plain water (P0/9118.8 ml) or water contains brown sugar (P2/9081.8 ml). Slaughter and carcass weight of broilers are 1701.33 g, 1849.40 g, 1847.27 g and 1263.87 g, 1386.00, 1379.90, for P0, P1 and P2 respectively. Statistical analysis show significant differences ($P < 0,05$) in slaughter and carcass weight among the treatments in which those parameters are higher for broilers received P1 and P2 than that of P0. Carcass percentage is the ratio of slaughter and carcass weight, which are 74.27%, 74.93 and 74.71 for P0, P1 and P2, respectively. No differences in carcass percentage were obtained ($P > 0.05$) among the treatments. In conclusion, the present study has shown that giving 1 % brown sugar in drinking water and coconut milky juice as drinking water has no significant effect on voluntary intake and carcass percentage. However, giving brown sugar water and coconut milky juice affect drinking water consumption, slaughter and carcass weight.

Key Words: Broiler, Brown Sugar, Coconut Juice

Performance of Male Kisar Sheep Given Different Concentrates

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ABSTRACT

Kisar sheep is an Indonesian local sheep, farmed in Kisar island, Southern regency, Mollucas province. In Kisar island, sheep are farmed in extensive system, which is carried out on dry land native pasture without use of supplements and forage crops. The aim of the experiment was to determine the effect of giving different concentrates on performance of ram Kisar sheep. Sixteen Kisar sheep aged 5-8 months and body weight ranging from 7 - 11 kg. The animals were housed individually in pens in which they were well accustomed. The animals were fed chopped elephant grass and rice bran or corn flour or soybean curd waste or sago by product. The experiment was carried out in two periods, 4 weeks adjustment period, allowed the animals to adapt to environment and the feed offered and 7 weeks measurement period. The experiment was arranged into a Complete Randomized Design, with four treatments and four replications. The treatments were P1 (Elephant grass + rice bran), P2 (Elephant grass + corn flour), P3 (Elephant grass + soybean curd waste) and P4 (Elephant grass + sago by product). Parameters measured were total dry matter (DM) intake, concentrate DM intake, live weight gain and feed conversion. Chopped elephant grass was offered *ad libitum* and water was available at all times. During the experiment all the animals were offered chopped elephant grass *ad libitum* and 200 g of each concentrate separately. The concentrates were mixed with a half of tea spoon salt and given twice daily at 07.00 h and 16.00 h before the grass. The effects of treatments on performance of the animals were examined by analysis of variance using the GLM of SAS. Main effect differences were detected using LSD. The results of present experiment show that total DM (the pooled data over both concentrate and elephant grass) intakes were 425.28 g, 503.02 g, 467.43 g and 385.33 g per head/day for P1, P2, P3 and P4, respectively. No significant difference ($P > 0.05$) in the total DM intake across all treatments. Live weight gain and feed conversion obtained from the present experiment were 104.77, 113.10, 95.24, 55.95 g/head/day, and 4.26, 4.69, 5.02 and 7.82 for P1, P2, P3 and P4, respectively. Similar results were obtained in which the treatments have no significant effect ($P > 0.05$) in live weight gain and feed conversion. However DM intake of concentrates was significantly different ($P < 0.05$). The animals received corn flour (P2) and rice bran were higher significantly ($P < 0.05$) than those consumed rice bran (P1) and sago by-product (P4) which were 159.89^c, 151.76^c, 89.10^b, 8.23^a g/head/day, respectively. It can be concluded from the present study that the total DM intake are similar among the treatments but Kisar sheep consumed more corn flour and rice bran than soybean curd waste and sago by product and they ate more soybean curd waste than sago by product. In addition, live weight gain and feed conversion do not differ significantly.

Key Words: Performance, Kisar sheep, Concentrates

Molar Proportion Of VFA And Methane Production With Supplementation of Jengkol (*Archidendron Jiringa*) Peel Powder on in Vitro

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ABSTRACT

This experiment was designed to evaluate the effects of jengkol (*Archidendron jiringa*) peel powder supplementation on *in vitro* molar proportion of VFA and methane production in cattle. The treatments were arranged in a randomized block design with 4 treatments (0%, 2%, 4%, 6%) and 4 replications. The variables observed included molar proportion of VFA, methane production, and hydrogen balance. Data were tested using Analysis of Variance (ANOVA) and the differences among treatments means were examined by Duncan Multiple Range Test. The results showed that the supplementation of jengkol (*A. jiringa*) peel powder until 6% did not affect ($P > 0.05$) molar proportion of VFA but the treatment without supplementation of jengkol (*A. jiringa*) peel powder had the highest ($P < 0.05$) acetate proportion, methane production and H_2 production. It is concluded that the supplementation of jengkol (*A. jiringa*) peel powder until 6% decreased methane production and potential to increase livestock productivity.

Key Words: Jengkol Peel Powder, Methane, Molar Proportion of VFA

The Effects of Direct Application of The Palm Kernel Meal (PKM) Fermentation Containing Probiotic in The Excreta to Reduce The Fecal Ammonia of Quails (*Coturnix-Coturnix Japonica*)

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ABSTRACT

One of the most concerned pollutants in confined poultry farm is Ammonia (NH₃), because it affects quail performances and causes environmental issues. NH₃ is a serious issue that should draw attention. This study was conducted to evaluate the effectiveness of direct application of the palm kernel meal (PKM) fermentation containing probiotic in the feces to reduce the fecal-ammonia emission of quails (*Coturnix-coturnix japonica*). Palm kernel meal contains mannan oligosaccharide as sources of prebiotic with three culture bacteria (*B. Cereus*, *B. L. Bulgaricus* and *S. Thermophilus*) were used in the experiment. In this experiment, each treatment-replication, 50 g of fecal quails were collected from the poultry farm and placed in 400 ml beakers. The fecal sample was then treated with 0%, 2%, 4%, 6%, 8% containing probiotic and prebiotic (sybiotic) and covered with plastic wraps. The volatile ammonia, fecal pH and moisture content were measured after 24 hour of standing and repeated at 48 hr. Ammonia emissions were measured using Kitagawa Toxic Gas Detector (Kitagawa, aspirating Gas Pump AP-20). For microbiological analysis, fresh fecal samples were collected from farm house of quails. One gram of fecal material were taken from each treatment for microbial analysis. Total aerobe, *Coliform/E. Coi*, *Bacillus sp.*, were enumerated by using plate count agar (Mckonkey agar) and *Bacillus Agar*, respectively. Plates were incubated at 30 °C for 24 h. *Lactobacillic* count was enumerated by using MRS Agar (Difco) and incubated in an anaerobic chamber at 37 °C for 48 h. Experimental design used was Complete Randomized Design (CRD) consisting of five treatments with five replicates. The result of the experiment indicated that direct application of the palm kernel meal (PKM) fermentation containing probiotic up to 8% in the fecal quails significantly ($P < 0,05$) reduced fecal ammonia, pH, moisture content. However, it was not significantly influence ($P > 0.05$) microbial counts in the feces. The conclusion of this research was that the direct application of the palm kernel meal (PKM) fermentation containing probiotic in the fresh fecal of quails were effective to reduce ammonia emission of fecal ammonia of quails.

Key Words: Ammonia, Probiotic, Fermentation, PKM, Quails

Production Performance of Local Village Chicken Fed by Agriculture by-product Supplemented with Herbal Probiotics and Mud Clams Extract (*Polymesoda erosa*) in Kendari-South-east Sulawesi

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ABSTRACT

Ninety day old chick (DOC) of local village chicken was used in this experiment to evaluate the effect of agricultural by product-based feed supplemented with herbal probiotics (HP) and mud clams extract (MC) on production performance of local village chicken. Completely randomized design was used with 5 treatments and 4 replications. The treatments consisted of inclusion level of R0 (control) 0.75%HP+1.5%MC (R1), 1.5%HP+3%MC (R2), 2.25%HP+4.5%MC (R3), 3.0%HP+6.0%MC (R4). All chicken was kept in a group of five flock equipped with feeding and water supply apparatus. The results showed that local village chicken got R2 treatment gave higher respond in feed consumption (32.5gd^{-1}) compared to R0 (23.1gd^{-1}), R1 (23.9gd^{-1}), R3 (24.0gd^{-1}), and R4 (21.3gd^{-1}). The daily gain of local village chicken was also higher in R2 treatment (7.4g^{-1}) compared to R0 (4.6gd^{-1}), R1 (4.9gd^{-1}), R3 (4.6gd^{-1}), and R4 (4.1gd^{-1}). However, feed conversion resulted from those treatments did not show significant difference. The lower feed conversion gain in this experiment was existed in R2 treatment (4.0) followed by treatment R1 (4.9), R0 (5.0), R4 (5.2), and R3 (5.4). Therefore, it was concluded that the treatments had a significant effect on feed consumption and daily gain but had no effect on feed conversion of local village chicken. Inclusion level of 1.5% herbal probiotics and 3% mud clams extract gave better effect on both of feed consumption and daily gain of local village chicken.

Key Words: Local Village Chicken, Herbal Probiotics, Mud Clams, Daily Gain, Feed Conversion

Utilization of Local Feed to Support New Entrepreneur in Poultry Business

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ABSTRACT

Nowadays, Indonesian poultry business dominated by big enterprises like Charoen Phokpand Indonesia, Japfa Comfeed, Gold Coin etc. The enterprises depend on imported feedstuffs, so the feed price is very volatile because influenced by international trade and dollar value change. The condition cause the new enterprises difficult to survive, so that it will be reasonable for them to utilize local feed. The objectives of the research were utilization of local feedstuffs in ration formulation in order to minimize feed cost and ensure availability of feed continuously. The reseach conducted to three new poultry enterprises ie broiler, local chicken and local duck on March to July 2018. The required data were the price and their ingredients nutrient content. Price data were obtained through the survey to the source of the raw material. Nutrient content data obtained through proximate analysis and literature study . Ration formulation done by linear programming algorithm with computer tool using microsoft excell software with the solver function. The feed materials that are potential provided continuously are corn, rice bran, coconut cake, soy beans, dried fish, bone flour, limestone and topmix. Results of feed formulation for broiler was corn (52.1%), coconut cake 17.4%), soya beans (10.0%), dried fish (20%) and top mix (0.5%). The ration price was IDR 4128/kg, did not include the cost of processing. Nutrient content of these ration are crude protein (22%), ME (3000 kcal/kg), fat (5.8%), crude fiber (4.4%), Ca (1.2%), P (0.9%), lysin (1.4%), methionine (0.6%) and tryptophan (0.3%). Formula of ration for local chicken was corn (53.2%), rice bran (18.1), coconut cake (11.0%), dried fish (17.2%) and top mix (0.5%). The ration price was IDR 3421/kg. Nutrient content of the ration are crude protein (18%), ME (2800 kcal/kg), fat (6.0%), crude fiber (5.1%), Ca (1.0%), P (1.0%), lysin (1.2%), methionine (0.5%) and tryptophan (0.2%). Ration formula for duck was corn (48.2%), rice bran (2.8%), coconut cake (20%), soy beans 8.5%, dried fish (20%) and topmix (0.5%). The ration contains protein (22%), ME (2900 kcal/kg), fat (5.7%), crude fiber (4.9%), Ca (1.2%), P (0.9%), lysin (1.4%), methionine (0.9%) and tryptophan (0.3%). Cost of ration was IDR 3994/kg. The conclusions of this study is the local feed ingredients potential used as a constituent of rations to support new entrepreneurs in poultry business.

Key Words: Linear Programming, Local Feed, Broiler, Local Chicken, Duck

Effect of Addition of Chicken Feses and *Tithonia diversifolia* on Liquid Fertilizer Quality (N, P and K) That Comes from Organic Garbage

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ABSTRACT

Garbage is one of the reasons for the imbalance living environment. Garbage consists of organic garbage and anorganic garbage. Anorganic garbage comes from leftover leaves and others. Organic garbage has the potential to be processed into liquid fertilizer. To improve the quality of liquid fertilizer (N, P, K content), research was carried out with the addition of chicken feces and tithonia. The aim of this study is to find out the effect of addition of tithonia and chicken feces on increasing the nutrient content of N, P and K of organic liquid which is inorganic. The study was carried out with experimental methods using Complete Randomized Design (CRD), with 4 treatments and 4 replications. Treatment A = Organic garbage 100% (Control), Treatment B = 60% organic garbage + 28% tithonia + 12% chicken feces, treatment C = 60% organic garbage + 32% tithonia + 8% chicken feces, and treatment D = 60% organic garbage + 36% tithonia + 4 chicken feces. The variables measured were N, P, K content. The results of the study showed that Nitrogen, phosphorus and Potassium content of the treatments were significantly different ($P < 0.05$). The result can be concluded that treatment D where 60% organic garbage + 36% tithonia + 4% chicken feces give the best result of nitrogen and phosphorus content (N = 4.76%, P = 2.37%). Whereas the highest calcium content in treatment C was with 60% organic garbage + 32% tithonia + 8% chicken feces (K = 3.11%).

Key Words: Fertilizer Liquid, Chicken Feses, Tithonia, Nitrogen, Phosphorus, Potassium

The Effect of Leguminous Supplementation on Rice Straw Ammoniated Complete Feed on Digestibility in Vitro

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ABSTRACT

Leguminous is the best source of protein to ruminant. Tannin content in legumes can provide protein by pass for ruminant. This study was conducted to determine the effect supplementation of leguminouses (*Leucaena leucocephala*,) on digestibility of the complete feed straw rice straw ammoniated. The study was conducted in an in vitro used a randomized block design where there are 3 treatments dan 5 replications. The treatments were A. 50% rice straw ammoniated + 50% concentrate, B. 50% rice straw ammoniated + 40% concentrate + 10% *Leucaena leucocephala*, C. 50% rice straw ammoniated + 30% concentrate + 20% *Leucaena leucocephala*. The results showed that the addition of *Leucaena leucocephala* increased the digestibility of BK, BO, NDF, ADF, Cellulose and Hemicellulose ($p > 0.05$). Increased doses of *Leucaena leucocephala* until 20% decreased digestion of nutrition compared with dose 10% but was still higher than control. The best results from this study were obtained at supplementation of 10% *Leucaena leucocephala* to complete feed rice straw ammoniated.

Key Words: Digestibility, *Leucaena leucocephala*, Complete Feed, Rice Straw Ammoniated

Nutritive Values of Fish Meals Produced from Overflowed Marine Fishes

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ABSTRACT

The present research was carried out to evaluate nutritive values of fish meal produced from three species of overflowed marine fish with two different processing methods (drying and steaming). Samples of three fish species, i.e. sardine, blacktip pony fish, and mackerel were taken from fishermen in the districts of Padang Pariaman. Fresh fish samples processed into meal products by direct sun drying or steaming before drying. Fish meals were then analyzed for moisture and crude nutrient content (crude protein [CP], crude ash, crude fat [CF], and minerals (Ca, P). Their nutritive values were evaluated by mixing 5% of fishmeal with basal diet and fed to 180 laying quails. There were six dietary treatments: basal diet + 5% sun-dried sardine meal (P1), sun-dried blacktip pony fish meal (P2), sun-dried mackerel meal (P3), boiled sardine meal (P4, boiled blacktip pony fish meal (P5) and boiled mackerel meal, respectively. All diets were formulated to be iso-nitrogenous and iso-caloric. The quails were divided into 18 experimental units (@ 10 birds), each treatment consisted of 3 replications. Parameters measured included feed intake, egg production, FCR, egg shell quality and tibia bone weight. Data were assigned to two-way variance analysis in completely randomized factorial design of 2x3x3. CP content ranged 70.1-75.1%, CF: 1.0-7.1%, crude ash: 12.9-24.1% DM, and moisture: 3.6-10.1%. There were no significant effect of different fish sources and processing methods on feed intake, FCR and egg shell quality. However, quails fed on diet containing boiled fish meals (P3, P4, P5) showed significantly higher egg production and heavier and longer tibia bones ($P < 0.05$) than those fed on direct sun-dried fish meals (P1, P2, P3). The results suggested that fish meal from overflowed marine fishes would be better produced by steaming process for better product qualities in terms of moisture and crude nutrient content and nutritive values.

Key Words: Overflowed Fish, Fish Meal, Nutritive Values

The Profile of Lipid in Blood Plasma and Thigh Meat of Broiler Fed *Turbinaria Murayana* Brown Seaweed

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ABSTRACT

A feeding trial of *Turbinaria Murayana* brown seaweed to broiler was conducted to evaluate both its utilization as broiler's feed and the effect of its alginate content in lipid profile in blood plasma and thigh meat in broiler. Alginate content in *Turbinaria Murayana* is 13.51%. It's a linear unbranched polymers containing β - (1 -> 4)- linked D-mannuronic acid (M) and α -(1 -> 4)- linked L- guluronic (G) acid residu. Previous research reported that alginate plays a role in cholesterol-lowering effect in rats. Experiment was performed in completely randomized design with different levels (0, 2.5, 5.0, 7.5, and 10.0%) of *Turbinaria murayana* seaweed in broiler diet. Each treatment was repeated five times. Lipid profile in blood plasma (cholesterol total, HDL, and triglyceride), cholesterol and lipid content in thigh meat of broiler were parameters in this experiment. The result showed, that *Turbinaria murayana* in broiler diet can lowering total cholesterol, triglycerides, and HDL content in blood plasma of broiler significantly ($P < 0.05$), and decreased the lipid and cholesterol in thigh meat of broiler. It concluded, feeding 10% of *Turbinaria Murayana* brown seaweed to broiler was the best level in lowering of cholesterol total, triglyceride and HDL in blood plasma, and also in lowering of cholesterol total and fat in thigh meat of broiler.

Key words: *Turbinaria Murayana*, Lipid, Blood Plasma, Thigh Meat, Broiler

Growth and Productivity Brown Midrib Sorghum Mutant Line Patir 3.7 (*Sorghum bicolor* L. Moench) as Feed on Different Nitrogen Fertilizer Level

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ABSTRACT

The study aimed to observe the best Nitrogen fertilizer level based on growth and biomass production of Brown midrib sorghum mutant line Patir 3.7. This research was conducted at Field Laboratory in the Faculty of Animal Science, Andalas University Padang used the experimental method of completely randomized block design. The treatments consist N0 = control; N1 = 50 N fertilizer kg/ha; N2 = 100 N fertilizer kg/ha and N3 = 150N fertilizer kg/ha. Measurement on agronomic and production parameters was planted height, stem diameter, leaf width length, leaf stem panicle ratio, stem Brix sugar content, and fresh and dry matter biomass production. Analysis of variance followed by Duncan Multiple Range Test (DMRT) was done. The result showed that addition N fertilizer produced the higher stem diameter, leaf length, leaf width, leaf ratio, stem ratio and fresh biomass production significantly ($P < 0.05$), but the panicle ratio, stem Brix sugar content, and dry biomass productions were not significant effect ($P > 0.05$). Based on those findings, it can be concluded that N fertilizer application produces the better growth and as well as produces the fresh biomass.

Key Words: Brown Midrib Sorghum, Nitrogen Fertilizer, Sorghum Mutant Line Patir 3.7

Level of Giving Local Microorganism (MOL) on Biofermentation of Palm Midrib with *Pleoratus Ostreatus* on Digestible Nutrients (*In-Vitro*)

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ABSTRACT

The objective of this study was to evaluate further on the palm midrib MOL fortification on palm midrib biofermentation with *Pleoratus ostreatus* fungus in vitro with different MOL levels and is expected to improve digestibility so that it can replace the field grass as the main source of forage feed Ruminants. The study was conducted based on a randomized block design with 4 treatments and 3 groups as replicates. The treatments were: Fortification of Palm midrib MOL from palm midrib biofermentation with *Pleoratus ostreatus* with dose: 0%, 1,5%, 2,0% and 2,5% of total Dry Mater Baglog. Parameters observed in this study Is the digestibility of the Dry Matter, Organic Matters, crude protein, crude fiber and crude fat. The results showed that the treatment of fortification of Local Microorganisms (MOL) palm fronds can improve the digestibility of dry matter, organic matter, crude protein and crude fiber. Highest digestibility from dry matter, organic matter, crude protein and crude fiber found in palm midrib biofermentation MOL palm midrib dose 2.5% (dry matter digestion 39.32%, organic matter digestibility 45.45%, crude protein digestibility 42.80% and crude fiber digestibility 31.35%) , but fortification of MOL on biofermentation of palm midrib has nonsignificant on crude fat digestibility (*in-vitro*)

Key Words: Local Microorganisms, Palm Midrib, Digestibility, Nutrients, In-Vitro

The Use of Pineapple Waste Silage as Forage Source on Short and Medium Chain Fatty Acid Profile in Milk Goats

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ABSTRACT

The purpose of this study was to know the use of pineapple waste silage as forage source on short and medium chain fatty acids profile in milk goats. The pineapple waste were milled and mixed with 8% (w/w) of rice brand, put into anaerobic plastic bag and storage until 21 days to produce pineapple silage. Twelve lactation ewes cross breed (PE) were allocated into randomized blocks design with four kinds of feed treatments and three groups of lactation periods. The feed treatments were P0 (60% forage + 40% concentrate); P1 (30% forage + 30% pineapple silage + 40% concentrate); P2 (15% forage + 45% pineapple silage + 40% concentrate); P3 (60% pineapple silage + 40% concentrate). The variables observed were feed consumption, short and medium chain milk fatty acids. Data analyzed were used of SAS programme (SAS user guide, 2003). The result of this study showed that the use of pineapple waste silage as forage source had increase effect ($P < 0.05$) of feed consumption and no significant effect ($P > 0.05$) on short and medium chain fatty acids profile in milk goats. The average short and medium chain fatty acid in this study ranged from 0.03 to 6.88%. It was concluded that the use of pineapple waste silage until of 100% as forage source could be in their a positive effect on short and medium chain fatty acids profile in milk goats.

Key Words: Pineapple Waste, Silage, Forage, Fatty Acid, Milk Goat

Carbon Storage Capacity And Nutrient Quality Of Forage Natural Grasses In Palm Plantation At Transformation Forest Ecosystem In Jambi

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ABSTRACT

Despite of being forage, grasses are also potential in storing carbon in transformed forest ecosystem. Nevertheless, its quality as well as its capacity has not been elucidated, due to lack of data, especially for those whose are grown under palm plantation coverage in the transformation forest ecosystem. Many ecological studies of carbon storage focus on timber or woody plants. Hence, identification of the varieties, nutrient quality and carbon storage capacity of grasses were the aim of this study. Observation was conducted in the palm plantation at Sarolangun District, Jambi Province that was a representative of lowland rain forest transformation ecosystem. Randomized samples were taken from designing plots and sub-plots. Furthermore, root, stem and leaf were separated from the grass for further examination. It was identified that *Panicumbrevifolium*, *Axonopuscompressus*, *Centothecalongilamina* Ohwi, *Schleriasumatrensis* Retz, *Kyllingabrevifolia* Rohb, *Paspalum* sp, *LeptochloaChinensis* L, and *Cyperusmultispicatus* Boeks were high potential grass species in carbon storage beside as primary ruminant feed. This was indicated by percentage of C organic found in the grass (37.6 % - 52.5 %) in comparison to around 2.55 % - 8 % of that in soil. In addition, C organic and Nitrogen content found in the leaf was conspicuous rather than in the stem and in the root. However, there was still variation identified in dry matter value, Nitrogen content, C/N ratio, NDF, ADF, fiber fraction and digestive value of dry substances of organic matters for all observed species.

Key Words : Carbon Storage, Ecosystem, Forest, Grasses, Nutrient Quality

Application of Fuzzy Linear Programming for Buffalo Ration Formulation by Using Sugarcane Waste and Cabbage Waste

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ABSTRACT

The buffalo in Indonesia have widely variation, so the requirements of nutrition is uncertain, and there is no standard. Thus, formulation of ration by conventional linear programming (LP) produce the vague formula. The convensional LP requires input data that rigit in exact figure, unfortunately the data is not found in real condition. The last decade, it has developed the new method that integrates fuzzy logic theory to linear programming that known as “Fuzzy Linear Programming” (FLP). This research applied the FLP for formulating the ration of growing buffalo, in which crude protein (CP) and total digestible nutrient (TDN) requirement are fuzzy. Requirement of CP ranges 9.8% to 12,9%, and TDN ranges 58% to 65%. The ranges was categorized based on membership value (α). The $\alpha=1$ means the most ideal number to meet the requirements, on the other hand $\alpha=0$ means the requirements is violeted totally. In the research, $\alpha=0$ was CP 9.8% and TDN 58%, whereas $\alpha=1$ was CP 12.9% and TDN 65%. The objective function was maximaiize the α . The contrans were minimize cost of ration with meet the nutrition requirement maximally. Ration formulation carried out using Microsoft Excel with solver fuction. Feed stuffs used were sugarcane top, bagasse, molasses, cabbage waste, *Thitonia diversifolia*, rice brand, palm kernel cake, ultramineral, and salt. The result of formulation with $\alpha=1$ and $\alpha=0$ indicated that the ration cost IDR 483/kg and 235/kg (as fed basis) respectively. The formulation by FLP produce the formula with $\alpha=0.53$ and ration cost IDR 351/kg.. The ration contains (as fed basis) sugarcane top (24.6%), bagasse (32.4%), mollases (15%), cabbage waste (15%), Thitonia diversifolia, (3.3%), rice brand (0.7%), palm kernel cake (8.6%), ultramineral (0.3%) dan salt (0.1%). The dry matter (DM) content 30%, and others nuttition content (DM basis) were CP(11.5%), TDN (61.7%), fat (6%) and crude fiber (21%). The formula need to be tested, before applying in real business.

Key Words: Fuzzy Linear Programming, Buffalo, Sugarcane Waste, Cabbage Waste, Ration Cost

Macro Minerals (Ca, P, Mg and K) Concentration Mixed of Elephant Grass (*Pennisetum purpureum*) CV. Taiwan and Legume *Indigofera Zollingeriana* with Different Doses of Nitrogen Fertilizer

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ABSTRACT

This study aims to determine the content of macro minerals (Ca, P, Mg and K) of Elephant grass cv. Taiwan and legumes of *Indigofera zollingeriana* are grown mixed with different doses of N fertilizer on land that was given *Fungi Mycorrhizae of Arbuskula* (FMA). This research was conducted by planting grass and Indigofera in the land by different N fertilizer: 0% N, 25% N, 50% N, 75% N. The measured parameters are macro mineral contents of Ca, P, Mg and K. Statistical Analysis calculated by the method of randomized block design with 4 treatments and 3 replications. The results showed that the treatment effect is not significant ($P > 0.05$) on the content of macro minerals (Ca, P, Mg and K) of elephant grass cv. Taiwan and legume Indigofera. The mineral content of elephant grass cv. Taiwan ranged from of Ca: 5.6 to 6.6, P: 3.2 to 3.6, Mg: 2.9 to 3.5, K: 5.0 to 5.8 g/Kg DM, respectively. While, macro minerals of legume Indigofera was ranged from of Ca: 4.1 to 4.9, P: 4.0 to 4.3, Mg: 2.8 to 3.0, K: 4.4 to 5.4 g/Kg DM, respectively. From the results of this study concluded that different doses of fertilizer N up to a dose of 75% gives the same result by giving N 0% to macro mineral (Ca, P, Mg and K) of elephant grass cv. Taiwan and legume *Indigofera*.

Key Words: *Pennisetum purpureum*, *Indigofera zollingeriana*, Macro Minerals, N Fertilizers, Mycorrhizae

Effect of Addition Garlic Flour as Feed Additive in Digesta Viscosity, Microflora, and Intestinal Characteristic of Native Chicken Crossbred

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ABSTRACT

The research purpose was to determine the garlic flour effect as the feed additive on digesta viscosity, microflora, and intestinal characteristic of broiler. The research method was used completely randomized design with 5 treatments and 5 replicates. The materials used for this research were 300 unsex day old chicks with native chicken crossbred strain with average body weight 40.11 ± 9.13 g/head. The treatments used for research were dietary with T₀ (basal feed), T₁ (basal feed + 0.25% garlic flour), T₂ (basal feed + 0.30% garlic flour), T₃ (basal feed + 0.35% garlic flour), T₄ (basal feed + 0.40% garlic flour). The parameters observed were digesta viscosity, intestinal characteristic bacteria (lactic acid bacteria, Escherichia coli, and Salmonella sp.), and (villus length, crypt depth, and villus surface). The data analysis was the analysis of variance (Anova) and continued by Duncan Multiple Range Test. The results showed that using the garlic flour effect as feed additive has significant difference ($P < 0.05$) on viscosity digesta, intestinal characteristic (crypt depth and villus surface) (Salmonella sp.) and significantly different ($P < 0.01$) (Lactic acid bacteria and Escherichia coli). The addition of 0.45% garlic flour gave the best effect on digesta viscosity, microflora, and intestinal characteristic of native chicken.

Key Words : Garlic, Microflora, Intestinal Characteristic, Villus, Native Chicken Crossbred

Evaluation of Gas Production Profile, Dry Matter and Organic Matter of *Nypafruticans* Wurmbfrond Growing in Low Land Area of Tanjung Jabung

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ABSTRACT

The aim of this experiment was to describe the gas profile, degradation of DM and OM of *Nipah*. The samples of *Nipah* were collected from some coastal areas in East Tanjung Jabung Regency and transported to the Animal Nutrition, Universitas Jambi. Samples were separated between fronds and leaves, separately chopped and dried for evaluating gas profile and analysing of DM and OM. *In vitro* gas technique was applied to evaluate the gas profile. Gas production was recorded at 0, 2, 4, 6, 8, 10, 12, 16, 24, 36 and 48 h. T-test was applied to test the different composition of DM and OM between NF and NL. The results showed the total gas production from NF looked higher than that from NL. The composition of DM and OM was not significantly ($P > 0.05$) different between NF and NL. Based on the gas production profile and the composition of DM and OM, NF or NL could be possibly used as an alternative feed especially for ruminant.

Key Words: Dry Matter, Frond, Gas Profile, Leaf, *Nipah*, Organic Matter

The Effect of Cocoa Pod Fermentation with MOL of Rumen Content on Fiber Fraction Component and in Vitro Digestibility

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ABSTRACT

This study aimed to evaluate the fiber fraction component and in-vitro digestibility of cocoa pod husk fermented by local microorganisms (MOL), namely the rumen contents. The research used completely randomized design with 5 treatments of 4 replications each. The dose of MOL to ferment pod cocoa was as follows A: 0 ml/kg of substrate, B: 3 ml/kg of substrate C: 6 ml/kg substrate, D: 9 ml/kg of substrate, and E: 12 ml/kg of substrate. The parameters measured were the fiber fraction component of fermented cocoa pod and in vitro digestibilities of dry matters and NDF. The results showed that the dose of MOL significantly ($P < 0.05$) affected The NDF, ADF and hemicellulose contents, but it had no effect on cellulose and lignin contents ($P > 0.05$). In vitro dry matters and NDF digestibilities were significantly ($P < 0.05$) affected by the treatments. In conclusion, fermentation by MOL at a dosage of 12 ml/kg substrate reduced fiber fraction component and increased digestibilities of dry matter and NDF.

Key Words: Cocoa Pod Husk, Fermentation, Local Mikroorganisme (MOL), Fiber Fraction Component, In-Vitro Digestibility

The Effect of Type of Packaging and Storage Time of Ruminant concentrate feed based on palm kernel cake to Physical and Nutrients Quality

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ABSTRACT

The purposed of research were to obtained type of packading and storage time of ruminant concentrate feed to physical and nutrients quality. Ratio ruminant concentrate feed based on palm kernel cake were compossion nutrients Dry Matter 88.01%, Crude Protein 14.6%, Fat 6.24% and Total Digestible Nutrients. This study uses a completely randomized design (CRD) with two factors: factor A type of packaging (A1: Woven bag (an aerob) ; A2: Woven bag (aerob) and factorial B is the storage time (B0: 0 week; B1: 4 weeks and B2: 8 weeks) which is repeated 3 times. The parameters observed were physical and nutrients quality . The physical quality such as: stack angle, density, stack density, stack compaction density,aroma, color, microbial contamination and nutrients quality suc as: water content, dry matter, crude protein and cude fat. The results showed that the interaction and type of packaging gave no significant effect ($P > 0.05$) on dry matter (DM),organic matter (OM), crude protein (CP) and ether exstract (EE), but the storage time had a very significant effect ($P < 0.01$) on DM, OM CP and EE. This research can be concluded that storage 2 month was the best.

Key Words: Concentrate, Ruminant, Palm Kernel Cake, Nutrients, Physical

The Effect of Type of Packaging and Storage Time of Ruminant Pellet Based on Fermented Oil Palm Trunk to Physical and Nutrients Quality

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ABSTRACT

The purposed of research were to obtained type of packading and storage time of ruminat pellet based on fermented oil palm trunk to physical and nutrients quality. Ratio of fermented oil palm trunk to concentrates were 30:70%, using 15% cassava starch as binder. This study uses a completely randomized design (CRD) with two factors: factor A type of packaging (A1: woven bag; A2: craft) and factorial B is the storage time (B1: 1 month; B2: 2 months and B3: 3 months) which is repeated 3 times. The parameters observed were physical and nutrients quality . The physical quality such as: stack angle, density, stack density, stack compaction density, durability index, texture, aroma, color, microbial contamination and nutrients quality suc as: water content, dry matter, crude protein and ether extract. The results showed that the interaction and type of packaging between storage time gave no significant effect ($P > 0.05$) on physical and nutrient quality, but the storage time had a highly significant effect ($P < 0.01$) on physical and nutrient quality. This research can be concluded that storage 3 month was the best on physical and nutrient quality and still suitable with SNI standard quality.

Key Words: Pellet, Ruminant, Fermented Oil Palm Trunk, Nutrient, Physical

Optimization Production of γ -aminobutyric acid (GABA) by Selected Lactic Acid Bacteria Isolated from Indigenous Fermented Durian (*Tempoyak*)

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ABSTRACT

The purpose of this research is to optimization of γ -aminobutyric acid (GABA) production by selected lactic acid bacteria isolated from indigenous fermented durian (tempoyak). Selected Lactic acid bacteria (LAB) previously isolated from indigenous fermented durian (tempoyak) that have ability to produce γ -aminobutyric acid (GABA). The study was started with identification of selected LAB by 16 S RNA, followed optimization of GABA production by culture condition using different initial pH, temperature, glutamate concentration, incubation time, carbon and nitrogen sources. Result from indentification used polymerase chain reaction of 16S rRNA gene sequences and phylogenetic analysis was *Lactobacillus plantarum* (coded as Y3) with a sequenced length of 1400bp. Gaba production after measurement by HPLC were highest at pH: 6.0; temperature: 30°C; glutamate concentration: 0.4%; incubation time: 60 h; glucose and yeast extract as carbon and nitrogen sources. Whereas GABA can be produced with the optimum condition fermentation were 66.06 mM.

Key Words: Lactic Acid Bacteria, *γ -amino butyric acid*; Indigenous Fermented Durian, PCR

Palm Kernel Cake Fermentation by Using Lignocellulolytic and Carotenogenic Fungi as Poultry Diet

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ABSTRACT

Palm kernel cake (PKC) can be used as an alternative feed based on the potential availability and nutrient content. Two experiments were conducted to improve the nutrient quality of PKC through fermentation by using *Phanerochaete chrysosporium* as lignocellulolytic fungi and *Neurospora crassa* as carotenogenic fungi. Experiment 1 was performed in a 3 x 2 factorial experiment of completely randomized design with 3 replicates. First factor was inoculum dose (3,5, and 7%) of *Phanerochaete chrysosporium* and second factor was incubation period (7 and 9 days). Measured variables were Crude Fiber (CF) and Crude Protein (CP), cellulose, lignin, cellulose enzyme activity. Experiment 2 was to compare nutrient content between fermented (the best treatment at experiment 1) vs. unfermented one. Measured variables were PKC's nitrogen retention, amino acid profile, crude fiber digestion, and Metabolizable Energy (ME). Result of the experiment 1, there was a very significant ($p < 0.01$) interaction between inoculum dose and incubation period reduced CF, cellulose, lignin, and increased CP content, cellulose and ligninase enzyme activity. Experiment 2, Nitrogen retention, crude fiber digestion, and ME content of fermented was better than unfermented PKC. Fermentation treatment improved PKC's amino acids profile. In conclusion, fermentation by using 7% inoculum of *Phanerochaete chrysosporium* and 7 days incubation period was the best treatment for improving PKC's nutrient quality.

Key Words: Fermentation, *Neurospora crassa*, Nutrient Quality, Palm Kernel Cake, *Phanerochaete chrysosporium*

**The Utilization of Different Binders for Pelleted Native Chicken Ration
Based on Coconut Meat Waste Supplemented with Mannanolytic
Thermophilic Bacteria and Thermostable Mannanase: A Physical
Characteristic of Pelleted Native Chicken Ration**

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ABSTRACT

This research aim was to know the influence of addition of binders (bentonite, tapioca flours, gambier liquid waste, and cassava flour waste (onggok)) on physical characteristics of pelleted native chicken ration based on coconut meat waste supplemented with mannanolytic thermophilic bacteria and thermostable mannanase. A completely randomized design was applied in this experiment with five treatments and five replicates. Moisture content, stack angle, bulk and compacted bulk densities, specific gravity, compaction rate, and pellet durability were determined. Data were analyzed by analysis of variance according to completely randomized design and Duncan's Multiple Range Test. Data indicated that moisture content, bulk density, compact bulk density and pellet durability were affected significantly by binders, while stack angle, specific gravity and compaction rate had not been affected by the presence of binders. Moisture content, bulk density, compacted bulk density, pellet durability of ration with binders were significantly different with ration without binder. Ration with gambier liquid waste binder had the highest value for bulk density and compacted bulk density, i.e. $1.36 \text{ g/cm}^3 \pm 0.011$ and $1.46 \text{ g/cm}^3 \pm 0.001$ respectively, while the value of pellet durability in ration with bentonite and tapioca flour binders were higher than others (98.63 ± 0.11 and 98.49 ± 0.05). It is concluded that the addition of binders in native chicken ration based on coconut meat waste supplemented with mannanolytic thermophilic bacteria and thermostable mannanase pelleted were able to improve the physical characteristic of native chicken ration.

Key Words: Physical Characteristic, Pellet, Binders, Coconut Meat Waste

In Vitro Digestibility of Ammoniated Citronella Waste Supplemented with Cassava Leaves, Phosphorus and Zinc Minerals

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ABSTRAK

This research was conducted to obtain rumen microbial growth enhancing supplements that most effectively increase the digestibility of ammoniated citronella lemongrass waste. Supplements that boost rumen microbial growth consist of cassava leaves as a source of branched chain amino acids, phosphorus and zinc minerals with the following treatment: P0 = ammoniated citronella lemongrass waste, P1 = ammoniated citronella lemongrass waste + 5% cassava leaves, P2 = P1 + 0.4% phosphorous minerals, P3 = P1 + 100 ppm zinc and P4 = P1 + 0.4% phosphorous minerals and 100 ppm zinc minerals. Evaluation of dry matter digestibility, neutral fiber detergent, soluble acid detergent, cellulose and hemicellulose was carried out by incubating ammoniated citronella lemongrass waste feed samples in *in vitro* media for 48 hours at 39°C. Data were analyzed using a 5 x 4 randomized block design method analysis. The addition of rumen microbial growth enhancing supplements significantly ($P < 0.05$) increased the digestibility of ammoniated citronella lemongrass waste in the rumen. The digestibility of ammoniated citronella lemongrass waste was higher ($P < 0.05$) which was supplemented with cassava + zinc mineral (P3) leaves compared to P2, P1 and P0, but significantly ($P < 0.05$) lower than P4. Cassava leaf supplementation, phosphorous minerals and zinc were the most effective in increasing the digestibility of ammoniated citronella lemongrass waste in the rumen.

Key Words: Cassava Leaves, Phosphor, Zinc, Digestibility, Ammoniated *Citronella lemongrass* Waste

Supplementation Nutrient Precursor Rumen Microbial Growth for Increasing Degradation of Ammoniated Lemon Grass Waste

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ABSTRACT

This experiment was conducted to evaluate the effectiveness of supplement precursor rumen microbial growth to increasing degradation of ammoniated lemon grass waste. Supplement precursor rumen microbial growth consists of cassava leaf as source of branch chain amino acid, mineral phosphorus and zinc with treatments e.g : T0= ammoniated lemon grass waste, T1= T0 + 5% cassava leaf, T2= T1+ 0.4% mineral phosphorus, T3= T1 + 100 ppm mineral zinc and T4= T1 + 0.4% mineral phosphorus + 100 ppm mineral zinc. Evaluation degradation of dry matter, neutral detergent fiber, acid detergent soluble, cellulose and hemicelluloses was conducted with incubation feed sample on invitro medium for 48 h at 39°C. The data were analyzed using the analysis of variance following a 5 x 4 randomized block design. The additional of supplement precursor rumen microbial growth significantly ($P<0.05$) increases degradation of ammoniated lemon grass waste in the rumen. Degradation of ammoniated lemon grass was significantly ($P<0.05$) higher supplemented with cassava leaf + mineral zinc (T3) than T2, T1 and T0, but was significantly ($P<0.05$) lower than T4. Supplementation cassava leaf, mineral phosphorus and zinc (T4) was the most effective to increasing degradation of ammoniated lemon grass waste in the rumen.

Key Words: Cassava Leaf, Phosphorus, Zinc, Degradation, Ammoniated Lemon Grass Waste

Effects of Feeding Tropical Herbal Fortified Urea Molasses Block (UMB) on Feed Consumption, Digestibility, and Daily Weight Gain Of Beef Cattle in West Sumatra, Indonesia

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ABSTRACT

West Sumatra Province has been designated as one of 20 priority provinces for Beef Self-Sufficiency Programmes in Indonesia. Our previous in vitro studies showed that some tropical herbal plants could potentially have other benefits not just limited to the content of nutritional substances, but also as a compound to manipulate rumen microbes, stimulating growth and at the same time used for maintenance of livestock health. The results showed that the tropical herbal plants affects the rumen microbes and provide a positive effect on the fermentation rumen (the concentration of NH₃ and VFA) and gas production in vitro. This research aimed to study the effects of feeding tropical herbal fortified UMB on feed consumption, digestibility and body weight gain of beef cattle. Research material used was 10 local beef cattles in Pauh Sub-District of West Sumatra Province. The experimental design used in this study was Completely Randomized Design (CRD) with 5 treatments and 2 replications, treatment A (fresh grass + UMB as Control), B (fresh grass + white turmeric (*Curcuma zedoaria*) enriched UMB, C (fresh grass + Green chiretta (*Andrographis paniculata*) enriched UMB, D (fresh grass + Brotawali (*Tinospora crispa*) enriched UMB), E (fresh grass + Java ginger (*Curcuma xanthorrhiza* Roxb) enriched UMB. Ingredients used in making UMB were: molasses, urea, rice bran, mineral mixture, salt, tapioca and cement as binding agents. The parameters observed are digestability of dry matter, organic matter, crude protein and body weight gain. The results of the analysis of variance showed highly significant effects ($P < 0.01$) of all parameters measured compared to control diet, however, treatment B (UMB fortified with *C. zedoria* showed the best results on all parameters measured. The provision of antioxidants of *C. zedoria* (Jayaprakasha *et al*, 2006) fortified to UMB is significantly effect the productivity of beef cattle. The conclusion of this study is the use of white turmeric herbal fortified UMB increase dry matter intake 6340 g/h/d, organic matter 5865 g/h/d, crude protein 549.58 g/h/d and increase the digestibility of dry matters from 61,49 % to 76,94%, organic matter from 65,58 % to 79,26%, and crude protein from 55,76 % to 79,18% and body weight gain from 230.18 to 539.58 g/h/d.

Key Words: Urea Molasses Block, Herbal, Feed Consumption, Digestibility, Body Weight Gain

Effect of Probiotic Waretha on Consumption, Body Weight Gain and Feed Conversion of Domestic Chickens

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ABSTRACT

The experiment was conducted to examine the effect of Waretha Probiotic in drinking water on consumption, body weight gain, and feed conversion of domestic chicken on starter period. This study was used 200 native chickens CP 808 was raised for 12 weeks, was placed in a unit cage measured 85cm x 70cm x 30cm. Each unit consists of 10 chickens. The experimental design used a completely randomized design (CRD) with 4 treatments and 5 replications. The treatments were added Waretha Probiotic in drinking water: R0 (0 CFU/ml), R1 (45.10^9 CFU/ml), R2 (65.10^{10} CFU/ml), R3 (43.10^{12} CFU/ml). The parameters of this study were consumption, body weight gain and feed conversion. The result of this study showed that the addition Waretha Probiotic each treatment were significantly affected ($P < 0,01$) of consumption and feed conversion, while it was not significantly affected to body weight gain ($P > 0,05$). From this result can be concluded that the addition of Waretha Probiotic to dose 43.10^{12} CFU/ml in drinking water can decrease consumption, feed conversion and did not affect body weight gain. In this condition obtained consumption 2868,83 g/bird, body weight gain 789,37 g/bird, and feed conversion 3,65.

Key Words: Body Weight Gain, Consumption, Domestic Chickens, Feed Conversion, Waretha Probiotic

The Effect of Duration of Giving Cinnamoni Extract as A Growth Promoter Feed Additive and Antimicrobial to Broiler's Performance on Organic Breeding

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ABSTRACT

Cinnamoni Extract is a growth promoter feed additive and also plays role as antimicrobial that can substitute the use of antibiotic on the ration. This research was conducted to examine the effect of duration of giving the Cinnamoni Extract (EC) to the broiler's performance. This research used 160 broiler chicks on the age of 8 days which was caged on 20 boxes of cage. Each cage contained 8 chicks. There were 5 treatments concerning the duration of giving Cinnamoni Extract: A = no EC given (control), B = EC given every day for 5 weeks, C = EC given every day for the first 2 weeks and the last week, D = EC given every day for 3 weeks, and E = EC given every day for 4 weeks. The treatments were repeated 4 times. The result of this research showed that the treatment has a real impact ($p < 0,05$) to the increasing of weight and ration conversion, but was not really effective to the ration consumption. All EC-giving treatments (treatment B, C, D, and E) can increase the weight gain and decrease the ration conversion ($p < 0,05$). The treatment C (giving EC for the first 2 weeks, stop the giving, and give EC again on the last week) showed bad responses on weight gain and ration conversion ($p < 0,05$) compare to treatment B, D, and E. the conclusion of this research is that the giving duration of Cinnamoni Extract every day for 5 weeks, 4 weeks, and 3 weeks (B, E, and D) gave a better response on weight gain and ration conversion compare to the giving for 2 weeks.

Key Words: Cinnamoni Extract, Giving Duration, Weight Gain, Ration Conversion, Feed Additive

Analysis Proximate of Senduduk Leaves (*Melastoma malabathricum L.*)

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ABSTRACT

Proximate Analysis on Senduduk leaves (*Melastoma malabathricum L.*) with the aim to determine the content proximate include water content, ash content, crude protein, crude fiber, crude fat on senduduk leaves (*Melastoma malabathricum L.*). This of research is experimental research that uses a simple experiment on a laboratory. At the proximate analysis consist of water content (%), ash content(%), crude protein (%), crude fiber (%), crude fat (%). The result shows that the water content ranges for 66.67%, ash content ranged for 2.39%, crude protein ranged for 3.95%, crude fiber ranged for 7.90%, and crude fat ranged for 0.72%.

Key Words: Proximate, Senduduk Leaves

The Physical Quality of Complete Feed of Modified Granules Made from Legumes and Swamp Forage for Goat Feed

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ABSTRACT

This study was conducted to investigate the physical quality of complete feed of modified granules made from legumes and swamp forage for goat feed. Swamp forages used are kalakai (*Stenochlaena palustris*) and purun tikus (*Eleocharis dulcis*) which high of crude fiber were mixed by indigofera as protein source, rice brand, molasses, tapioca, and salt. The form of granule feed is still rarely used for goat feed. Before being tested, the quality of physical properties was tested, which included weight, diameter, density, stack angle, compaction density, modulus of fineness (mash). Based on the test results obtained that there are differences ($P < 0.05$) type of swamp forage to the physical quality of complete feed granule. Complete feed with forage swamp material can be obtained rough categories of 11.78%, moderate 81.05% and smooth 7.17%. Stacking density for coarse granule is 0,26 g/ml, medium granule is 0.38 g/ml, fine granule 0.385 g/ml. Stacking compaction density for coarse granule is 0,30 g/ml, medium granule is 0.295 g/ml, fine granule 0.32 g/ml. Coarse granule diameter 2,197 mm, medium granule 1,54 mm and fine granule 0,38 mm. Stack angle for coarse granules 107.8°, medium granule 114.4°, fine granule 147.8°.

Key Words: Physical Quality, Complete Feed, Granule

Potential of Palm Oil Leaf Midrib as Beef Cattle Feed

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ABSTRACT

This study aims to determine the level of supplementation of cassava leaf meal as a source of the best branched chain amino at ammoniation palm leaf that has been supplemented with minerals S and P as feed for cattle *in vitro*. This research is carried out from May 17, 2018 to August 17, 2018. Samples of palm leaf ammoniation supplemented with mineral sulfur and phosphorus as well as cassava leaves flour are analyzed with Proximate, Van Soes't and *in-vitro* in ruminants Nutrition Laboratory Faculty of Animal Husbandry Andalas Padang. In this study, treatment tests several levels of supplementation of cassava leaves flour in palm leaves where ammoniation and mineral S (0.40%) and P (12:27%) are supplemented. The method used in this study is experimental method using randomized block design with 6 treatments and 4 replications. The treatments tested are 6 levels of cassava leaf meal supplementation: 0%; 5%; 10%; 15%; 20% and 25% of dry matter. Parameters measured are: dry matter, organic matter, crude protein, NDF, ADF, cellulose, hemicellulose, and rumen fluid characteristics: pH, VFA concentration, NH₃-N levels of rumen fluid. The results show that the supplementation of mineral S: 0.4% and mineral P: 0.27% and flour cassava leaves: 5% of the dry matter provides the best digestibility compared to others. *In-vitro digestibility*: dry matter (55.56%), organic matter (59.83%), crude protein (55.34%), NDF (56.99%), ADF (50.01%), cellulose (60.78%), hemicellulose (71.35%). The rumen fluid characteristics: pH: 6.70, VFA: 129.89 mM, NH₃-N: 15.84 g/100 ml.

Key Words: Ammoniation, Cassava Leaves Flour, Mineral Supplementation S, P, Palm Leaf

The Effect of Inoculum Doses *Bacillus subtilis* and Fermentation Time to Improve The Enzyme Activity of Palm Kernel Cake

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ABSTRACT

An experiment was conducted to study the effect of Inoculum Doses *Bacillus subtilis* and fermentation time to improve the enzyme activity of fermented Palm Kernel Cake. The experiment used completely randomized design (CRD) with 3 x 3 factorial and 3 replications. The first factors were three doses of inoculum *Bacillus subtilis*: (3%), (5%) and (7%). The second factor was fermentation time: (1) 2 day (2) 4 day (3) 6 day. The parameters were mannanase activity, protease activity, cellulose activity of fermented palm kernel cake (FPKC). The result of the study showed that there was more significant interaction between doses of inoculum *Bacillus subtilis* and fermentation time ($P < 0,01$), than between each doses of inoculum *Bacillus subtilis* and fermentation time were significantly affected ($P < 0,01$). The conclusion it is concluded that PKC fermented with 7% doses of *Bacillus subtilis* and 6 day fermentation time. This condition can be seen in mannanase activity 24.27 U/ml, protease activity 10.27 U/ml, cellulose activity 17.13 U/ml of fermented palm kernel cake (FPKC).

Key Words: Fermentation, *Bacillus subtilis*, Inoculum, Palm Kernel Cake, Enzyme

Effect of Feeding Encapsulated Turmeric (*Curcuma domestica*) Extract as Feed Additive on The Performance of Broiler

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ABSTRACT

This study aims to determine the effect of feeding encapsulated turmeric (*Curcuma domestica*) extract (EnTE) as feed additive on the performance of broiler. A total of 80 broiler chicks aged 3 days receiving treatment for 4 weeks. Each unit consisted of 4 broiler chicks and equipped with feeding place, and drinking place. The research method was assigned to Completely Randomized Design consisting of 5 treatments with 4 replications. The encapsulated turmeric extract were added at 0%, 0.25%, 0.50%, 0.75%, and 1% in a standard broiler diet. The parameters observed were broiler performance, which included feed intake, average weight gain, and feed conversion and meat cholesterol. The result of analysis of variance showed that the effect of treatments was highly significant ($P < 0.01$) on the average weight gain, feed conversion and meat cholesterol in broiler. In this condition, average weight gain is 378 g/b, ration conversion 2,62 and meat cholesterol 63,20 mg/dl. Use of 0.75% encapsulated turmeric (*Curcuma domestica*) extract (EnTE) as feed additive in ration can improve broiler performance and decrease cholesterol.

Key Words: Encapsulated Turmeric (*Curcuma domestica*) Extract, Feed Additive, Broiler Performance, Cholesterol

The Effect of Urea Supplementation and Incubation Time in Fermentation Process of Bagasse by Using *Ganoderma lucidum* on The Growth of *G.* *lucidum* and The Nutritive Value of Bagasse

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ABSTRACT

Fermentation of bagasse with fungi *Ganoderma lucidum* was designed to determine the effect of urea and optimum time to get the best growth of *G. lucidum* and the nutritive value of bagasse and the optimum laccase activity of *G. lucidum*. Treatments were combination of nitrogen dose (0% urea and 0.3% urea) and incubation time (0, 10, 20, 30, 40, 50, 60 days). The treatments were arranged in factorial 2x7 and allocated in completely randomized design with three replications. *G. lucidum* was grown in potato dextrose agar (PDA) medium for 7 d and was inoculated to make inoculums of *G. lucidum* in rice bran medium. The inoculum of *G. lucidum* was inoculated to bagasse which have been added by nitrogen source, urea. The result showed that there was no interaction of urea supplementation and incubation time ($P>0.05$) on laccase activity, but each factor, urea level and incubation time was significant different. The laccase activity in sugarcane bagasse which supplemented with 0.3% urea was higher than sugarcane bagasse without supplemented. The activity of laccase produced by *G. lucidum* increased by increasing incubation time from 10 days up to 50 days; after 50 days the laccase activity started to decrease. The highest laccase activity was occurred at 50 d fermentation time, with value 6.54 U mL⁻¹. Dry matter content of the substrate decreased as much as 27.45% in urea treatment, was higher than non urea supplementation (15.45%). At the urea treatment, organic matter content of the substrate decreased as much as 31.64%, was higher than non urea supplementation (21.86%). It can be concluded that urea can be used 0.3% as nitrogen source in fermentation process using *G. lucidum*. *Ganoderma lucidum* used lignocellulosic substrate for its growth and produce laccase enzyme to degrade lignin of sugarcane bagasse. The optimum fermentation to produce laccase enzyme and the optimum laccase activity were 50 d and 0.3% urea with value 6.54U mL⁻¹.

Key Words: Urea, Laccase, *Ganoderma lucidum*, Bagasse, Fermentation

Reclamation of Former Coal Mined Land by Analysis of Fiber Fractions Digestibility of Elephant Grass (*Pennisetum Purpureum*) cv. Taiwan with Different Doses Nitrogen Mixed *Fungi Mycorrhizae* of *Arbuskula*

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ABSTRACT

This research aims to determine the content fiber fractions (Neutral Detergent Fiber, Acid Detergent Fiber, cellulose and hemicellulose) digestibility in Elephant grass cv. Taiwan by *vitro technique* for improve forage quality and availability due to reclamation of former coal mined land with different doses nitrogen mixed *Fungi Mycorrhizae* of *Arbuskula* (FMA) *Glomus manihottis*. The experiment was conducted in Ruminant Nutrition Laboratory of the Faculty of Animal Husbandry Andalas University in Padang. The method used in this study is using a Random Design Group with 5 treatments and 4 replications. Treatment A (100% N, P, and K without FMA), treatment B (100% N, P, and K + 10 g FMA), Treatment C (75% N, P, and K + 10 g FMA), Treatment D (50% N, P, and K + 10 g FMA) and treatment E (25% N, P, and K + 10 g FMA). The results analysis of study showed that the effects were not significantly different between treatments ($P < 0.05$) digestibility of NDF, ADF, cellulose and hemicellulose. NDF digestibility of Elephant grass cv. Taiwan ranged from 60.40 to 63.56%, ADF digestibility ranged from 50.26 to 53.81%, Cellulose digestibility between 50.50% to 55.19%, and hemicellulose digestibility between 75.32 to 79.70%. Based on the research it could be concluded that 25% of fertilizer N, P, and K + FMA *glomus manihottis* 10 grams digestibility of NDF, ADF, cellulose, and hemicellulose a relatively similar to the treatment given fertilizer N, P, and K 100% without FMA.

Key Words: Fiber Fraction Digestibility, Elephant Grass, FMA, N, P, K

***Bisozyme* Effect on the growth of Elephant Grass (*Pennisetum Purpureum*)
cv. Taiwan in Ultisol Soil For Second Harvesting**

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ABSTRACT

The purposed of this research to determine effect of *Bisozyme* utilization on growth (plant height, leaf lenght, leaf width, numbers of tillers and stem diameter) Elephant Grass cv. Taiwan in ultisol soil for the second harvesting compared inorganic fertilizers used. The experiment was conducted in Farm of Forage of Faculty of Animal Husbandry, Andalas University in Padang. The design used in this study was a Randomized block Design with 5 (five) treatments namely : P0 (Manure + N, P and K), P1 (*Bisozyme*), P2 (*Bisozyme* + manure), P3 (*Bisozyme* + N, P and K), P4 (*Bisozyme* + manure + N, P and K) and 4 (four) replications. The results of the analysis showed that *Bisozyme* treatment had no significant effect ($P < 0.05$) on leaf lenght, leaf weidth and stem diameter, but significantly different ($P < 0.05$) on plant height and number of tillers of Elephant Grass cv. Taiwan on Ultisol land for the second harvesting. Plant height ranged from 251.09 (P3) to 283,98 cm (P0), leaf lenght ranged from 8 (P1) to 10 stems/clumbs (P0) and stem diameter ranged from 2.15 (P3) to 2.44 cm (P4), respectively. From the result of this study it could be concluded that the treatment of *Bisozyme* mixed of manure (P3) could be good as organic fertilizer on the growth of Elephant Grass (*Pennisetum purpureum*) cv. Taiwan compared the use of N, P and K inorganic fertilizer in Ultisol Soil.

Key Words: Bisozyme, Elephant Grass, N, P, K

Addition of Soybean Milk Waste to Make Powder Inoculum of *Aspergillus ficum*

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ABSTRACT

This study aims to determine the effect of Addition of Soybean Milk Waste (SMW) and fermentation time to enzyme activity from powder inoculums of *Aspergillus ficum*. The research is an experimental study using completely randomized design (CRD) with 3x3 factorial pattern and 3 replications. The treatments consist of factor A (addition of SMW), which was divided to A1 (100% Rice bran), A2 (90% rice bran +10% SMW) and A3 (80% rice bran +20% SMW). Factor B (fermentation time) consists of B1 (5 days), B2 (7 days), and B3 (9 days). Parameters measured were the activity of cellulose, protease, and phitase enzyme. The results of the analysis of variance showed that there was a significant interaction ($P<0.05$) between factor A and factor B while each factor A and B was significantly affected ($P<0.05$). In this study, it can be concluded that the addition of Soybean Milk Waste (90% rice bran +10% SMW) and 7 days fermentation time showed optimal results as seen from 33.84U/ml of cellulose activity, 11.10 U/ml of protease activity and 6.08 of phitase activity of powder inoculums of *Aspergillus ficum*.

Key Words: Fermentation, Palm Oil Sludge, *Neurospora crassa*, *Phanerochaete chrysosporium*

Effect of Probiotics (EM-1) Addition on Quality Characteristics of Quail Meat

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ABSTRACT

The objective of the present study is to determine the effect of commercial probiotics (EM-1) used in animal feed as supplement on the meat quality of quails. The quails that been used in this study was from breed *Cortunic japonica*. Along the study, the quails were divided into four groups which are control quails and quails that feed with 1 L probiotics in different ratio concentration drinking (mL) there are 1:259; 1:500 and 1:750. After 42 days, all the quails were slaughtered and then the carcass and meat yield of each groups was determined. The value of carcass yield both in male and female quails treated with EM-1 showed significant differences ($p < 0.05$) compared to control quails. There were no differences in meat yield on the breast and whole leg part among different concentration probiotics and the control. The quality of protein in foods is determined by the types of amino acid and total of its essential amino acids. Treatment 1:500 showed significantly higher value ($p < 0.05$) in protein content and improvement in amino acid analysis compared to control. These addition of probiotics are therefore nutritionally possible replacements for growth promoters of quails and the use of additives also contributed to some improvements in the meat quality.

Key Words: Probiotics, Quality Characteristics, Quail Meat

**Oral
Presentation**
Animal Production and Technology

The Risks of Gastrointestinal Nematode Infestation in Cattle Based on Maintenance Environment in Aceh Province

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ABSTRACT

This study was conducted to determine the risk level of gastrointestinal nematode infestation (NGI) in beef cattle based on maintenance environment in Aceh Province. The sample in this study was cattle fecal, 64 samples were collected in high topography environment (Gayo Lues) and 93 samples were collected in low topography environment (East Aceh). The sample examination was conducted in IPA laboratory of Almuslim University. Centrifuge method and eggs per gram feces (EPG) using the counting chamber of Mc. Master were performed to see the presence of GI nematodes. Data obtained was analyzed by Prevalence Test and Odds Ratio Test (OR). Out of 64 samples from high topography areas examined, 14 samples were positive (21.9%, CI 13.5-33.43) and of 93 samples from low topography areas examined, 35 samples were positive (37.6%: CI 28.46-47.79). These results showed higher prevalence of GI nematodes in low topography. For TPGT GI nematodes seen in high topographic environments of 14 positive, eggs much as 567 grain/grams feces. While the topographical environment is low than 35 positive, more eggs that amounted to 669 grain/grams feces. These results indicate that high topography environment is significantly higher (<0.005) in infestation than the low topographic. While the risk level (odds ratio = OR) of both environments, cattle maintained in low topography environments probably infected nematode 0.56 time larger than the high topographic environments. And for risk ratio (RR) analysis or infection risk, cattle maintained in low topographic environments is more risk 0.66 times infected GI nematodes than cattle maintained in high topography environments.

Key Words: Cattle, Environment, GI nematodes, Infestation, Risk

Egg Production and Quality of Local Female Chicken by Dietary Self-Selection Reared Under Semi-Scavenging System in The Tropics

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ABSTRACT

The feeding standard for local chicken breeds in Indonesia has been published yet. The present study were aimed to measure egg production and quality while estimating the ME and CP needs during production for local female chickens reared under semi-scavenging system in the tropics (Indonesia) through dietary self-selection. A total of 138 twenty two week-old chicks were randomly distributed into 12 sheltered pens, 10-14 birds each. Two feeding methods (control and self-selection) were assigned to pens, so each treatment consisted of 6 replicates. The control group received a control diet complying with the Hy-line Brown Nutrient Requirements Standard, whereas the self-selection group had access to the control and four other diets (high energy-high protein, high energy-low protein, low energy-high protein, and low energy-low protein diet). Feeds and drinking water were provided ad libitum to 53 weeks of age. Feed consumption (FC), ME intake, CP intake, concentration of dietary ME and CP and egg production were recorded weekly. Egg quality was measured three times. Daily temperature and relative humidity in the morning (07:00), noon (12:00), and afternoon (17:00) were 21.8 to 28.1°C and 46 to 88%; 24.7 to 34.5°C and 35 to 72%; and 23.5 to 34.5°C and 36 to 80%, respectively. Data were analyzed using Proc Mixed of SAS, but egg quality was analyzed by ANOVA. The results showed that feeding method had apparent effect ($P < 0.001$) on ME intake, dietary concentration of ME and CP, egg production and CP intake ($P = 0.018$) but not FC. The effect of week and feeding method by week interaction were also very significant for all performance, except egg production was not affected with feeding method by week interaction. Weekly ME and CP intake of the self-selection group were greater than those of the control (1,709 vs. 1,575 kcal/bird; ($P < 0.001$) and 105.8 vs. 101.3 g/bird $P = 0.018$), respectively). Dietary concentrations of ME and CP in the self-selection group was higher ($P < 0.001$) than those in the control group (3,053 vs. 2,810 kcal/kg and 189.3 vs. 180.7 g/kg, respectively). Egg production of the self-selection group was higher ($P < 0.001$) than those of the control (60.5% vs. 55%). Over all, egg quality (eggshell thickness, shell strength, shell weight, egg weight, Hm, color, compare, HU, and yolk weight) was similar, except color and compare were higher in choice-fed birds when they grew older. This study suggested that self-selection feeding gave opportunity to hens adjusting their nutrient requirements and could increase egg production. The ME and CP needs were likely greater than the current standards.

Key Words: Self-selection, Local Female Chicken, Nutrient Intake, Egg Production, Egg Quality

Effects of Replacing Soybean Meal With Fermented Leaves and Seeds of The Rubber Tree (*Hevea Brasiliensis*) on The Production and Egg Quality of Kamang Laying Ducks

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ABSTRACT

This study aims to reduce the use of imported feed ingredients and feed ingredients that are competitive with human needs through a transition to local feed (conventional) and to determine the potential of fermented leaves and seeds of the rubber tree (FLSRT) to substitute soybean meal in Kamang laying duck rations without adverse effects on Kamang laying duck production. This experiment used 240 Kamang laying ducks aged 20 weeks. A completely randomized design was assigned with six treatments to replace 0, 20, 40, 60, 80 and 100% of soybean meal with FLSRT with four replications. The variables measured were feed intake, feed conversion and income over feed cost (gross profit) as well as variables related to egg production (hen day production and egg weight) and egg quality using the thickness of eggshell and a yolk color index. Data were analyzed statistically using ANOVA, and if the result showed a marked influence, then Duncan's multiple range test (DMRT) was applied. The performance of Kamang laying ducks was not affected significantly by substituting soybean meal with FLRST. Feed intake, feed conversion and egg production were also not influenced. In summary, fermented leaves and seeds of the rubber tree (FLSRT) can be substituted for up to 100% of soybean meal in the diet of Kamang laying ducks.

Key Words: Fermented Leaves and Seeds of The Rubber Tree (FLSRT), Hen Day Production, Quality, Kamang Laying Duck

Differences of Antibody Titer to Avian Influenza and Hematology Profile on Local Ducks in Central Java

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ABSTRACT

Avian Influenza (AI) in poultry farms in Indonesia is still a threat to the sustainability of livestock and farmers. Duck is one of the most heterogeneous natural reservoirs and hosts of AI viruses. This study aims to detect antibody titer AI levels in blood serum and duck eggs as well as to know the different hematology profile of Tegal and Magelang ducks in Central Java. Research method was survey at farmer level. Farmer and duck samples were determined by purposive random sampling of 10 breeders for each region. Selection of respondents and ducks was done based on the number of duck owners and duck age. The samples of farmers and ducks taken were determined randomly as many as 10 breeders in each area and from each breeder was selected 6 female ducks for their blood and 10 eggs to be analyzed using antibody titer against AI. The variables measured in this study were antibody titer against AI measured on blood serum and serum egg yolk, with inhibition hemagglutination test and haematological profile. The data obtained were analyzed using t test. The results showed protective antibodies against AI on blood serum Tegal ducks (seropositive) 58% while Magelang ducks 46%. Titer of serum antibodies of Tegal duck in the range of 22-25 while Magelang ducks 22-26. Titer of egg antibody in Tegal ducks in the range of 20-210 while Magelang ducks 20-27. T test on AI antibody titer on blood serum and serum of eggs of Tegal duck and Magelang ducks (which have different environment) showed no significant difference ($P > 0.05$). The result of T-test on leukocyte fraction profile showed that on heterophyl, lymphocyte, and H / L both ducks showed a very significant difference ($P < 0.01$). Higher H / L values in Tegal ducks show stress due to heat stress. T-test on red blood cells, white blood cells, hemoglobin, packed cell volume (PCV), total plasma proteins, eosinophils, monocytes, fibrinogen and albumin showed no significant difference ($P > 0.05$). The conclusion of the study was that there was no difference of of antibody titer level to AI and hematology profile in Tegal and Magelang ducks despite different maintenance environment. However, Tegal duck was indicative of higher stress with higher H/L values than Magelang duck.

Key Words: Avian Influenza, Hematology, Magelang Duck, Tegal Duck, Antibody Titer

Genetic Polymorphisms of the OLR1 And DGAT1 Genes Associated to Milk Contents in Holstein Friesian Dairy Cattle Under an Intensive Management in Central Java

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ABSTRACT

OLR1 gene or Oxidized Low Density Lipoprotein Receptor 1 gene serves to encode the binding vascular surface receptors and degrade the oxidized low-density lipoprotein. In dairy cattle a nucleotide mutation at 3'UTR location of the OLR1 gene results in C allele for producing higher milk fat content than A allele. The DGAT1 gene (Diacylglycerol O-acyltransferase) has a K232A mutation with K allele producing higher milk fat content than A allele. This study was aimed to study association of variant genotypes of the OLR1 and DGAT1 genes on milk fat and other milk components in Holstein Friesian (HF) dairy cattle. The target of this research is to obtain genotypes of the OLR1 and DGAT1 gene affecting positively to milk fat content in domestic HF cattle.

The observed animals were Holstein Friesian (HF) lactating cows for 53 heads kept intensively at one dairy station at BBPTU Baturraden, Central Java. Base mutations at 3'UTR location of the OLR1 gene and at K232A mutation of the DGAT1 gene were identified by PCR-RFLP (polymerase chain reaction - restriction fragment length polymorphism) technique. Allele frequency of the base mutations of each gene was analyzed by PopGen 32 program. Milk components of fat, protein, solid non fat (SNF) and lactose were the observed variables derived from morning, afternoon and the average of both. Study of association of variant genotypes of the OLR1 and DGAT1 genes to milk component was analyzed by GLM by considering lactation period (1-4, 5-6), calving season (1-4 mo., and 5-8 mo.) and calving year (2011, 2012). Association of lactation period (1-4, 5-6), breeding season (months 1-4, months 5-8) and breeding years (2011, 2012). Duncan Multiple Range Test was used to test significant differences among averages of these subclasses.

The OLR1 gene resulted in A allele and C allele with their frequencies respectively 0.4574 and 0.5426, whereas the DGAT1 gene resulted in A allele and K allele or their frequencies respectively 0.4255 and 0.5745. The OLR1 gene had a significant effect on milk fat ($P < 0.05$). Least square meant (LSM) values of milk fat contents the AC cows (4.411 ± 0.225 - 4.430 ± 0.342 kg) and the CC cows (4.463 ± 0.484 - 4.563 ± 0.313 kg) were higher against the AA cows (4.301 ± 0.235 - 4.351 ± 0.190 kg). However, variant genotypes of the OLR1 gene had no significant effect on other milk components ($P > 0.05$). Similarly, variant genotypes of the DGAT1 gene did not affect significantly on all milk component observed. It was concluded that there is a fairly good control of the OLR1 gene to fat contents in HF cows. The base mutation at 3'UTR location of the OLR1 gene therefore can be considered as initial information for the improvement of a genetic assisted selection (GAS) technique for milk fat content in domestic HF cows.

Key Words: Dairy Cattle, OLR1 Gene, DGAT1 Gene, Genetic Polymorphism

The Effect of Addition Sweet Orange Essential Oil and Penicillin in Tris Yolk Extender to Simmental Liquid Semen Against Percentage Motility, Viability and Abnormalities of Spermatozoa

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ABSTRACT

One of the causes a poor quality of liquid semen is increasing bacterial growth. The addition of sweet orange essential oil and penicillin in Simmental liquid semen is expected to improve the quality of liquid semen because it contains antibacterial. The purpose of this research is to know the value of percentage of motility, viability and spermatozoa abnormalities in Simmental liquid semen with addition of combination penicillin with sweet orange essential oil on tris yolk extender. The research hypothesis is the addition of combination penicillin with sweet orange essential oil to tris yolk extender can increase the value of the percentage of motility, viability and spermatozoa abnormalities in Simmental liquid cement. Materials used in this study is the Simmental fresh semen, tris yolk extender, penicillin and sweet orange essential oil. The experimental design used randomized design with 5 treatments and 5 replications. Treatment on the research is the addition of sweet orange essential oil 0%, 0.25%, 0.5%, 0.75% and 1%. The parameters observed were evaluation of motility, viability and abnormality spermatozoa before equilibration and after equilibration. The results showed the best result was the addition of 1% sweet orange essential oil and the lowest on the addition of 0% sweet orange essential oil before and after equilibration.

Key Words: Essential oil, Liquid semen, Penicillin, Simmental, Sweet orange

Supplementation of Various FSH Hormone Dosage on Quantity and Quality of Embryos Pesisir Cattle

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ABSTRACT

The purpose of this study was to determine the effectiveness of the supplementation of various doses of FSH hormone to corpus luteum (CL), number of embryos and quality of superovulation cattle. Treatment using Coastal cattle as much as 15 tail, then Coastal cattle treatment paired CIDR (containing hormone progesterone), laying CIDR in front position cervix for 11 days. Furthermore on the day to 10 given supplementation of various doses of FSH in the morning and afternoon for 3 days. Treatment cows were injected with FSH divided into 5 groups of livestock receiving 12 ml FSH, 14 ml FSH and 16 ml FSH treatment. Embryo collections are performed on days 6 to 8 after AI (artificial insemination). On day 6 - 8 after AI embryo harvest done. The results of the highest embryo gain on quality A at 16 ml FSH dose of 22.22% and the lowest at 14 ml FSH (0%). Subsequently, the highest number of embryos at quality B was obtained at 12 ml FSH dose (20%) and the lowest at 14 ml FSH (6.67%). The highest number of an embryo at quality of C was achieved at 14 ml FSH (33.33%) while the lowest was FSH 12 ml and 16 ml (0%). The highest degradation (Dg) was then obtained at 12 ml of FSH dose (60%) and the lowest at 14 ml FSH (33.33%). Furthermore, the highest number of UF embryos at 16 ml FSH (33.33%) was followed by 14 ml (6.67%) FSH and the lowest at 12 ml FSH (0%).

Key Words: FSH, Superovulation, Embryo, Pesisir Cattle

Production Performance of Layer Japanese Quail That Given Citrit Acid as Acidifier

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ABSTRACT

This research aimed to study the effect of citrit acid on production performance of layer japanese quail. One hundred of 12 weeks layer japanese quails were divided into 4 treatment and 5 replication based on completely randomized design. The treatments were citric acid addition level, they were 0, 0,3, 0,6, and 0,9% of citrit acid. This research used a self mixing feed that contained 2800 kkal/kg metabolizable energy and 17,5% crude protein. The parameters measured were feed consumption, egg weight, egg production, and feed conversion ratio. The obtained data during 4 weeks measurement were analyzed using variance analysis and continued with duncan's multiple range test. The result showed that addition of citric acid on japanese quail feed did not give any significant effect ($P>0,05$) on feed consumption and egg weight, but the addition of citrit acid gave a significant effect ($P<0,05$) on egg production and feed conversion ratio. During 4 weeks, addition 0,6% citrit acid showed egg production above 75%. It can be concluded that addition of 0,6% citrit acid showed a better egg production and feed conversion ratio performance.

Keywords: Japanese Quail, Citrit Acid, Production Performance, Layer, Acidifier

The Application of Deep Intracornual Artificial Insemination using Sexed Sperm to Produce Male Off Springs in Beef Cattle

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ABSTRACT

The research was conducted to determine conception rate and fetus sex ratio in cattle following DIAI and AI using Y-bearing sperms. Totally 465 heads of farmer-reared cows located in three region were allocated into three treatments. Two hundreds and sixty five heads was treated as P-0 (AI using non sexing sperms), P-1 (AI using Y-bearing sperms) and P2 (DIAI using Y-bearing sperms) were 100 heads respectively. The pregnancy and foetus sex were examinedultrasonogrphycally at 50-70 days after insemination. The results showed that conception rate of P0 {68.3%) were higher than P1 (52.0%) . and P-2 (61.0%). The DIAI method enhanced sexed semen derived pregnancy rate. Percentage of male fetuses was 49.05% in P-0. The use of Y-bearing sperms increased the number of male fetuses to 88.9% in P-1 and 90.3% in P-2.

Key Words: A, DIAI, Sexing, Spermatozoa, Cattle

Morphometrics of Etawah Grade Goat Females as Dairy Breeding Stocks under Intensive Management System in Central Java

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ABSTRACT

Etawah Grade (EG) goat is potential to be functioned as a local dairy goat. Morphology is a good indicator in determining criteria of ideal body shape in dairy goats. By possessing a body shape closer to an ideal dairy type, a dairy goat is presumed to have good milk producing ability. Data of body measurements and their intercorrelations can be used as initial indicators of performance-based selection for good EG dairy breeding stocks. The aims of this research were to study characteristics of morphometric, to investigate intercorrelation among body measurements, and to estimate chest girth from other body measurement(s) in EG goat females kept under an intensive management at one government dairy station in Purwokerto District, Central Java. Materials of this research were Etawah Grade (EG) goat females specified as breeding stocks of dairy goat kept under an intensive management of the Government Dairy Breeding Station at BBPTU Baturraden, Purwokerto District, Central Java. A total of 50 EG females at the ages of 1-6 years old were measured for shoulder height (SH), hip height (HH), body length (BL), chest girth (CG), and hip girth (HG). One way ANOVA analysis was used to describe body sizes based on real ages (1-6 years) and classified ages (1-4 years and 5-6 years). Intercorrelations among body sizes were analyzed by simple correlation, while simple and multiple regressions were used to predict chest girth from other body measurement(s). Averages of body measurements of the observed EG goat females increased by the ages. The averages of body sizes at the ages of 2 years old for SH, HH, BL, CG and HG were successively 75.0±11.1 cm, 79.8±1.8 cm, 65.3±1.8 cm, 77.0±3.9 cm, and 82.8±0.4 cm. At the mature ages (5 years old), compared to the young ones (2 years old), EG females had higher values of SH, HH, BL, CG, and HG by 6.3%, 1.8%, 17.9%, 18.0%, and 16.3%. CG had the highest correlation to HG ($r_s = 0.837-0.858$) and CG was accurately predicted by HG or by the combination of HG to another body sizes. High intercorrelations were found among certain body measurement(s) of the EG dairy goat females. The initial indicators of the performance based selection of this study could be a good indicator for earlier identification of the EG dairy goat females as candidates of good dairy breeding stocks.

Key Words: Dairy Goat, Body Measurement, Breeding Stock

Response of Superovulation by Using FSH (Follicle Stimulating Hormone) and Sex Determination of Embryos Using PCR in Pesisir Cows of West Sumatra

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ABSTRACT

This study was conducted to determine the response of superovulation by giving 16 ml dosage of FSH hormone to female Pesisir cattle. The estrus schedule of 15 Pesisir cows was set by inserting CIDR (Controlled Internal Drug Release) into the vagina for 12 days. At day 10, all cattles were injected with FSH for three consequent days but with decreasing dosage. On the 3rd day, FSH injection was accompanied by PGF_{2α} injection and CIDR was removed. The detection of estrus was performed at day 13. Natural mating was proceeded after the estrus signs visible. Collection of donor embryos was done on the 6th and 8th day after mating. The variables measured were the response of superovulation, total number of corpus luteum, number of embryos and sex ratio. The results obtained were all Pesisir cows responded to superovulation. The average number of of corpus luteum and embryos per cow were 5.93 ± 3.17 and ----, respectively, while the total of transferable embryos were 90, with an average of 6.00 or 61.64%. The sexing of embryos obtained in this study from 146 embryos awere 76.03% males (111 embryos) and 23.97% females (35 embryos). Based on total of transferable embryos, there were 51.37% male embryos and 11.28% of females embryos. The result of this study showed that the sex ratio of male embryos was higher than female embryos.

Key Words: Pesisir Cattle, Response of Superovulation, FSH, Corpus luteum, Total of Embryos, PCR, Sex Ratio of Male and Female

The Influence of Hormone and Blood Mineral Continues to The Success of Artificial Insemination in Bali Cow on The Low And Medium Areas Jambi Province

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ABSTRACT

The purpose of this study was to analyze differences in the effect of the hormone progesterone and blood mineral in the success of artificial insemination on Bali cattle between the medium and lowlands of Jambi Province. The research method used in this study is survey and laboratory. The survey method is used to evaluate the success of IB in the form of service per conception (S/C) The sampling technique used in this research is Stratified Random Sampling which consists of 2 strata, namely: Strata I is bali cattle that are inseminated by inseminators in the medium areas of Jambi Province represented by Tebo District. Strata II is a bali cattle that is inseminated by inseminators in the lowland areas of Jambi Province represented by Tanjung Jabung Barat District. Laboratory research was conducted to measure the blood and mineral blood hormones of Balinese cattle, to measure the content of the hormone progesterone in the blood of Balinese cattle using radioimmunoassay (RIA) technique. The results of the correlation analysis (Pearson Correlation, Kendall's tau_b, and Spearman's rho) obtained a relationship between the content of the hormone progesterone in the blood of cattle with the success of artificial insemination in cattle is very significant. The results of the correlation analysis (Pearson Correlation) obtained from the relationship between blood mineral content in the form of Zn, Se and Mg with the success of IB in cattle in the central cattle area of Jambi Province is very significant.

Key Words: Artificial Insemination, Hormones, Minerals, Bali Cows

**Effect of Using GnRH PLUS P4 and Estradiol Plus P4 on Ovarian
Response of Embryo Production of Local Pesisir Selatan Cows in West
Sumatra**

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ABSTRACT

The objective of this study to evaluate the effect of GnRH plus P4 and estradiol plus P4 on superovulation responses and to know the relation between ovarian activity of local pesisir selatan cows. The data were obtained from 4 local pesisir cows superovulated on breeding centre in west Sumatra. The treatment in superovulation was using GnRH plus P4 and estradiol plus P4 and data were analyzed using SPSS16 to determine the effect of treatment on ovarian structure and the regression correlation. The result showed that using GnRH plus P4 was greater ovulate rate, transferable embryos and lower the percentage of degenerate and unfertile ($P < 0.05$) than using estradiol plus P4. Linear regression between dominant follicle, the number of CL and the number of embryos in coefficient correlation $R_{fcl} = 0.950$; $R_{fe} = 0.829$ and $R_{cle} = 0.980$, respectively. In conclusion the using of GnRH plus P4 for FTAI is greater the response in embryos production of local pesisir selatan cows.

Key Words: GnRH, Estradiol P4, Embryo Production, FTAI

Antibacterial Activity of Nanoemulsion of *Curcuma zedoaria* (White Turmeric) Against *Mycoplasma gallisepticum*

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ABSTRACT

Chronic respiratory disease (CRD) is of high economic importance as this causes heavy production and mortality of the chickens. The main causative agent of CRD is *Mycoplasma gallisepticum* (*M. gallisepticum*). This is usually complicated by other secondary infectious due to *Escherichia coli* (*E. coli*). *Mycoplasma gallisepticum* is a simple prokaryote that functions as the major pathogen of CRD in fowls. The disease is prevalent in commercial poultry farms with weak health control measures, retard growth, decreased laying rate, and lower feed conversion ratio. Respiratory disturbances, excretion of nasal exudates, coughing, sneezing and hyperaemic of the conjunctiva are very often seen as the clinical signs of CRD infection. Chronic respiratory disease not only affects respiratory system but also reproductive system in the layers. Recently, herb medicines are commonly used for treating infectious disease in animals. Several herbs have varying degrees of antimicrobial activity. The objective of the present study was to determine the antibacterial activity of herb extract of *Curcuma zedoaria* (white turmeric) which was prepared in nanoemulsion evaluated against *M. gallisepticum*. The powdered dried rhizomes (5 g) were extracted with 50 ml ethanol from solid to solvent with a ratio of 1:10 (w/v). The extracts were concentrated under vacuum at 40-50°C using a rotary evaporator. Extracts were stored at 20°C and were freshly dissolved in suitable solvents prior to screening for nanoemulsion preparation. Nanoemulsion of herb extracts were made by using dimethyl sulphoxide (DMSO) as the solvent. Screening of those nanoemulsion for antibacterial activities were performed by Kirby Bauer disc diffusion method. The agar plates were inoculated with freshly grown bacterial culture of approximately 10⁸ CFU/ml for *M. gallisepticum*. About 100 µg nanoemulsion substances were loaded in a sterile filter paper disc (6 mm) and placed on plates. The pure solvents in equal volume were served as negative control and enrofloxacin (5µg) antibiotic disc was used as a positive control. The plates were incubated at 37°C for 24–48 hours. Evaluation of antibacterial activities were measured showing the diameter of the zones of inhibition against the tested bacteria. The results demonstrated that phytochemical analysis of the three nanoemulsions contain alkaloids, flavonoids and terpenoids. The *in vitro* antibacterial activity of nanoemulsion substances against *M. gallisepticum* were quantitatively assessed as present or absent of inhibition zones. The result of disc diffusion method using nanoemulsion substance revealed that white turmeric (20,41 ± 1,22 mm). Minimum Inhibitory Concentration (MIC) evaluation demonstrated that nanoemulsion of white turmeric extract has potentially result against *M. gallisepticum* (3,125%). The improvement

of nanoemulsion may need to nanoencapsulated formulation that characterize and stabilize its substances.

Key Words: *Chronic respiratory disease, Nanoemulsion, Mycoplasma gallispeticum, White Turmeric*

New Polymorphisms of the GHR Gene in exon 8 and 9 and Pit1 gene in Pesisir Cattle

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ABSTRACT

Growth hormone (GH) exerts its effects on growth and metabolism by interacting with a specific receptor (GHR) on the surface of the target cells. and Pit1 gene has important effect on growth, carcass, and meat quality traits in many species. Therefore, GHR and Pit1 genes have been suggested as candidate genes for growth traits in cattle. The purpose of this study was to identify genetic polymorphism of the Growth Hormone Receptor (GHR) genes and Pit1 gene and its relation with average daily gain and body measurement in Pesisir Cattle. Total of 176 blood samples were collected from two populations belonging to Padang Mangatas Breeding Station (23 samples) and from Pesisir Selatan district (153 samples). Genomic DNAs were extracted by Promega DNA purification kit and amplified by a polymerase chain reaction (PCR) technique. Then PCR products were directly sequenced to detect polymorphism and then were genotyped by the Polymerase Chain Reaction-Restriction Fragment Length Polymorphism (PCR-RFLP) methods using two enzymes *TasI* and *TscaI*. For GHR/*TasI* there were two alleles and three genotypes were found namely: allele A and B with A frequency 0.42 relatively lower than allele B frequency 0.58 and genotypes AA, AB, and BB with frequency genotype were 0.17, 0.50, and 0.33 respectively. For GHR/*TscaI* there were two alleles and two genotypes were found namely: allele C and D with A frequency 0.61 relatively higher than allele B frequency 0.39 and genotypes CC and CD with frequency genotypes 0.22 and 0.78 respectively. The digestion of 260-bp fragment amplified of Pit1 by *HinfI* restriction enzyme resulted two fragments (51 and 113 bp) for BB allele and one uncut 164-bp-long fragment for AA allele and three fragments (164, 113, and 51) for AB allele with frequency 0.81, 0.18, and 0.01 respectively. These three polymorphisms were not significant for average daily gain and body measurement as body length (BL), height at withers (WH) and chest depth (CD).

Key Words : Pesisir Cattle, GHR, Growth, Body Measurement

Polymorphism of prolactine genes and its association with body weight in Bayang ducks, local duck from West Sumatera, Indonesia

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ABSTRACT

This study aims to determine the polymorphism of Prolactin (PRL | XbaI and PRL | DraI) genes in Bayang ducks using the PCR-RFLP (Polymerase Chain Reaction-Restriction Fragment Length Polymorphism) technique and its association with weight of ducks aged 1-10 weeks. This study used 200 Bayang duck blood samples consisting of 102 male ducks (♂) and 98 female ducks (♀). DNA from blood samples was isolated using the Genomic DNA Purification Kit (Promega) using protocol from the manufacture. The DNA was then amplified using two primers with F: 5'-AAA TTC CCT CTC ACA GTT ACA-3' and R: 5'-GAT GCA GAG ACA AGT TTC ACC-3' and F: 5'- GAATAGAACACTTGACCCTG -3' and R: 5'- TAGAGGAGGCAAGCATAG -3' which produces fragments with a length of 416 bp and 566 bp. Restriction with *XbaI* enzymes that recognized the binding site (5'-TT CTAGA-3') resulted 3 genotypes: homozygote (+/+), heterozygote (+/-) and homozygote (-/-) with frequencies 0.455, 0.495 and 0.050 respectively and with frequency allele (+) 0.702 and frequency allele (-) 0.297. While the results of the restriction with enzyme *DraI* found three types of genotypes, namely (+/+), (+/-) and (-/-) with frequencies of 0.64, 0.35 and 0.01 respectively with frequency allele (+) 0.82 and allele frequencies (-) 0.18. From the results of the analysis, it was found that there was no relationship between these two diversity and weight ducks of duck.

Key Words: Bayang Duck, PRL-XbaI, PRL-DraI, Body Weight, PCR-RFLP

The influence of GnRH and PGF2 α hormone disposal against the speed of estrus and long estrus of buffalo in West Sumatra

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ABSTRACT

The study aimed to determine the effect of GnRH and PGF2 α hormones on the characterization of estrus for buffaloes. This study used 16 community-owned female mud buffalo in Nagari BukikSileh, Gumanti Valley, Solok Regency. The ingredients used are the hormone PGF2 α (*estrumate*) and the hormone GnRH (*chorulon*). Parameters measured are the speed of estrus, estrus duration, and estrus intensity. This research was carried out experimentally and sampling was done by purposive sampling method. The method used was Completely Randomized Design (CRD) with the treatment group was the GnRH hormone dose of 200 ug/head, 225 ug/head, 250 ug/head, and 275 μ g/head, and GnRH hormone was given twice. PGF2 α hormone a given at a dose of 5 ml/tail. The variables observed were: the rate of arousal and the duration of estrus. Observations were made after the second administration of GnRH hormone. The results of statistical analysis showed that the speed of estrus occurrence in Buffalo was 17.5 hours with a dose of 225 μ g/head of GnRH hormone with an average of 26.88 hours. The duration of estrus is the administration of GnRH hormone at a dose of 250 ug/head with an average of 18.44 hours.

Key Word: PGF2, GnRH, Speedof estrus, Estrus, Dadih

A Review of West Sumatera Local Ducks as Poultry Genetic Resources in Indonesia

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ABSTRACT

Local poultry plays an important role for smallholders and contributes significantly to food security of households in rural area communities. Duck is considered as the second most preferred poultry species in Indonesia after chicken used as supplier of eggs and meats. Duck breeds (*Anas platyrhynchos*) are important genetic resources which are therefore used for improvement of duck breeds genetic in the future. West Sumatera Province has five well-known local duck breeds; four breeds as producer of meats and eggs named Pitalah, Bayang, Sikumbang Jonti, and Kamang and Payakumbuh duck breed as racing duck. This article aims to compare the phenotypic traits of those five local duck breeds as a purpose to provide some baseline information on typical West Sumatra local duck breeds for genetic characterization, conservation and future breeding improvement programs.

Key Words: Pitalah, Bayang, Sikumbang Jonti, Kamang, Payakumbuh Race Ducks

Analysis of the Potential of Regional Livestock Breeding in West Sumatra Province “Availability of Sustainable Cattle”

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ABSTRACT

The research was to identify the potential of beef cattle in Pesisir Selatan District of West Sumatra Province in producing beef cattle and the feasibility of the region as a source of beef cattle in West Sumatra Province. Census and questionnaire are used in this study in which three sub-districts characterized by high, medium, and low cattle population are chosen using quota sampling. Subsequently, three villages are picked up from each sub-district. The observed variables in this study are the identity of the breeder and the cattle. Secondary data from related institutions are also used to support this research. The development of cattle population was analyzed using breeding theory approach. The average increase of the population was analyzed using a time series analysis. The results shows the efficiency of reproduction (ER) of 58.17% and the natural increase (NI) value of 24.35% indicating a moderate increase of the population. The results of this study also show that in general, the population of beef cattle in Pesisir Selatan Regency is still sufficient to meet the needs of the region with male and female net replacement rate (NRR) of 961.59% and 543.73% respectively. The average output of beef cattle for all breeds for cattle culled of bulls and female and the remaining replacement stock of young males and females is 2.70%; 1.46%; 7.71% and 6.70% respectively.

Key Words: Output, Beef cattle, Productivity

The Optimization of Flavanoid Temulawak (*Curcuma xanthorrhiza* Roxb) and Zink Minerals in Preventing Heat Pressure at Tropical Temperatures in Sikumbang Janti Ducks

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ABSTRACT

This research is about the use of rhizome flour of (*Curcuma xanthorrhiza*Roxb) and zinc minerals in local ducks Payakumbuh Sikumbang janti in tackling tropical heat. Curcuma herbal plants have flavanoids that function as anti-oxidants in ducks that experience stress due to the high temperature of the cage environment in the dry season. So to deal with the temperature situation, it was added in the ration of Sikumbang janti ducks, rhizome flour, met comedy and zinc minerals. Feed ingredients to be used are regular feed ingredients for corn, bran, fish flour, soybean meal, top mix and use of ginger flour with a level of 0.5%, 1.5% and 2.5% in rations. Additive in Sikumbang janti ducks. Ration and weight gain consumption and ration conversion will be calculated, and will be seen to influence the weight of the liver, kidneys and thyroid gland connected to the level by giving temulawak flour and zinc minerals. The experimental design was used in a randomized block design (RBD) with 4 treatments (level of mixture of ginger + zinc) with 5 groups. The four treatments were: A without treatment (*Curcuma xanthorrhiza*Roxb) in feed, B 0.5% mixture of ginger flour + zinc 40 ppm in ration, C 1.5% ginger flour + zinc 40 ppm, and D 2 5% temulawak + zinc powder mixture 40 ppm. The treatment ration will be arranged iso-protein (20%) and iso-energy (2900 kcal / kg ration). Feed ingredients compile rations, namely: milled corn, rice bran, fish meal, and palm oil as a regulator of the amount of energy metabolic rations. The variables that will be observed are: 1) production performance of feed consumption (g / head), performance of body weight gain (g / head), feed conversion. The level of mixture of ginger flour and zinc in the ration will be determined based on the weight of the liver, thyroid gland, kidney and spleen can be considered to be an alternative for overcoming the temperature of the hot environment.

Key Words: Sikumbang Janti Duck, Ginger (*Curcuma xanthorrhiza*Rox), Zinc Mineral, Performance, Physiological Organs

Rumen Fluid's Characteristics and Digestibility Ration Based on Palm Oil Industry by Product and Rice Bran Ratio for Etawa Crossbred Dairy Goat

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ABSTRACTS

The objective of research was to determine the rumen's fluid characteristics and digestibility ration of etawa crossbred dairy goat based on palm oil industry by-products. Palm oil industrial byproducts used was palm kernel cake (PKC) with additional materials as corn, rice bran, tofu waste and minerals. Research using a completely randomized design (CRD) with 5 treatments and 4 replications. The treatment is ratio of palm kernel cake and rice bran in ration, namely, A). 10 : 40, B). 20 : 30, C). 30 : 20, D). 40 : 10, E). 50 : 0. This research was in-vitro testing using Tilley and Terry method (1989). Parameters measured were rumen fluid's characteristics (pH, VFA and NH₃-N) and Digestibility of Dry Matter (DDM) and Digestibility of Organic Matter (DOM). The results of research showed that the treatment was significantly different on rumen's fluid characteristics and digestibility ($P < 0.05$). The best treatment is C ration with 30% palm kernel cake and all treatments show the characteristics of rumen fluid and digestibility according to the standard. The results of the research obtained were pH (6.8 – 6.9), VFA (100.28 mM – 118.34 mM), NH₃-N (13.37 mg/100ml – 20.47 mg/100ml), DDM (75.58% – 81.39%) and DOM (77.79% – 82.60%). From the research above, it can be concluded that palm kernel cake can be used in the ration of etawa crossbred dairy goats up to the level of 30%.

Key Words: Rumen Fluids, Digestibility, Etawa Crossbred Dairy Goat, By Product, Palm Oil

Performance of Crowing Kukuak Balenggek Chicken Based on Different Henroost Levels Under Intensive Management

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ABSTRACT

Kukuak Balenggek chicken (KBC) is one of the rare indigenous chickens in Indonesia which derive from West Sumatera Province. KBC has been estimated for the only one breed type crow in the word. This study aims to determine the performance of crowing KBC based on different henroost levels under intensive management. A total 14 heads of *Kukuak Balenggek* chicken were used in this reseach. The research method was used in this study, with Randomized Block Design 5 factor and 3 groups of number of crow level. The treatments were high of henroost P1(0 cm), P2 (50 cm), P3 (100 cm), P4 (150 cm) and P5 (150 cm). The variables were number of crow, the duration of the crow and the frequency of the crow. The observations were made at three time series (06.00-08-00am), (11.00-01.00pm) and (03.00-05.00pm). The result of this research showed that the number of crow was ranging 2-10 level of crow with means $4,81 \pm 2.46$. the influence of henroost high on the duration of crow in morning was significantly different ($P < 0.05$), whereas on the duration of crow in day time and afternoon was significant highlt different ($P < 0.01$). The influence of the high of henroost on the frequencies of crow in three time series was highly significant different ($P < 0.01$). The DMRT test results stated that the best leve of henroostl was 200 cm with a mean duration of crow 3.05” and frequency of crow 32.83 times / 30 minutes in the morning.

Key Words: Performance, *Kukuak Balenggek* Chicken, Henroost Level, Crow Number, Frequency of Crow

The Effect of Altitude and Dietary Energy Levels on Performance of Bayang Ducks

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ABSTRACT

The study was conducted to evaluate the interaction between altitude and dietary energy levels on performance of male Bayang ducks. The study used 120 ducks of male Bayang ducks 1 week old placed on 24 cages sized 60 cm x 50 cm x 75 cm. Ducks were maintained at medium (M) and low (L) altitude. The method used in this study was the experimental method, a split-plot experiment (Split Plot) 2x3 in Randomized Block Design with 4 groups of body weight as replications. The main plot consisted of 2 places (M and L) and subplot consisted metabolisable energy (ME) levels were 2700, 2900, 3100Kcal/kg. The variables measured were feed consumption, live weight, body weight gain, energy intake, feed conversion ratio (FCR), carcass weight, carcass percentage, abdominal fat percentage and income over feed cost (IOFC). The results of this study showed that there were no significant interaction ($P > 0.05$) between the altitude and energy levels on the consumption of rations, live weight, body weight gain, energy intake, feed conversion ratio, carcass weight, carcass percentage, abdominal fat percentage, while M and L altitude showed highly significant ($P < 0.01$) effect on feed consumption and no significant effect ($P > 0.05$) on other variables. The diet containing ME 2700 and 2900Kcal/kg consumed the ration higher than 3100Kcal/kg and no significant effect ($P > 0.05$) on body weight gain and others. Energy intake was higher at ration containing ME 3100Kcal/kg. The best IOFC results were obtained at energy level 2700 with a profit value of Rp. 11,602. The results of this study, can be concluded that to get a good performance of male Bayang ducks is reared at the medium altitude and the energy level of 2700Kcal/kg.

Key Words: Bayang Ducks, Altitude, Energy Levels, Performance

Characteristics and Morfometric Sperms of Pesisir Bull

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ABSTRACT

Pesisir cattle is one of Indonesia's local cattle that has not been widely researched. This study aims to determine the reproductive characteristics of male Pesisir cattle as information on male sperms sources in an effort to optimize the reproductive performance of local cattle, especially Pesisir cattle. The material used is male Pesisir cattle that have normal reproductive organs. The study was carried out for a year, from April to October, which included 2 environmental climates, namely from April to July in hot or dry conditions and from August to October with rainy environmental conditions. Spermatozoa collected is done using artificial vagina. Characteristics of sperms observed include macroscopy (volume, pH and consistency) and microscopy (mass movement, concentration, number of spermatozoa, motility and abnormalities). The results obtained showed that beside the variable of volume there was no significant difference in sperm characteristic of Pesisir bull between hot and wet conditions ($P > 0.05$). The average characteristics of sperms collected from the bull is a volume of 2.39 ± 0.97 ml, $\text{pH} \pm 7$, consistency between dilute and thick, mass movement between + to +++, concentration $196.21 \pm 33.62 \times 10^7 / \text{ml}$, the percentage of live spermatozoa $80.55 \pm 7.41\%$, the percentage of motile spermatozoa was $76.05 \pm 7.37\%$, and abnormalities were $12.26 \pm 3.19\%$. Morphometric spermatozoa of Pesisir cattle showed that the average head length was $11,593 \mu\text{m}$, head width $5,895 \mu\text{m}$ and tail length $63,845 \mu\text{m}$.

Key Words: Pesisir Bull, Sperms, Characteristics, Morphometric

The Effect of Probiotics *Lactococcus Plantarum* and Prebiotic Purple Sweet Potato (*Ipomoea Batatas* Sp.) on the Morphology and Microflora of Small Intestine of Male Kamang Ducks

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ABSTRACT

A study was conducted to evaluate the effects of probiotics *Lactococcus plantarum* (LP) and prebiotics Purple Sweet Potato (*Ipomoea batatas* sp.) (PSP) on the morphology and microflora of the small intestine of male Kamang ducks. One hundred 2 weeks old male Kamang ducks were placed in 4 treatment doses of the mixture of probiotics and prebiotics namely: P1 = Control, P2 = LP + PSP: 1×10^8 cfu / g, P3 = LP + SP: 2×10^8 cfu / g and P4 = LP + SP: 3×10^8 cfu / g. Data were analyzed statistically using SPSS and Orthogonal further tests. The variables observed were the length, width, and thickness of the duodenum and the illeum of villi, and a count both of LAB and *E coli* in the duodenum and the illeum. The results revealed that the length and width of villi were not influenced by treatment, conversely the thickness of intestinal increased ($P < 0.05$) by the mixture of probiotics and prebiotics treatment. The administration of probiotic LP and prebiotics PSP was highly significant ($P < 0.01$) leading the number of lactic acid bacteria and reduced the number of *E coli* in the duodenum and ileum. From this study, it concluded that the administration of probiotic LP and prebiotics PSP dose P3 get the best performance with the highest lactic acid bacteria number in both the duodenal and ileal.

Key Words: Probiotics, Prebiotics, Microflora, Small Intestine, Kamang Duck

Effect of Electrical Stimulation and Freezing Duration on Physical Quality of Silverside Meat of Pesisir Cattle

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ABSTRACT

This study aims to determine the effect of electrical stimulation and freezing duration on the physical quality of Pesisir Cattle Silverside meat. This experiment used 7.5 kg Pesisir meat (silverside) from 5 head male and 2,5-3 years old with Body Condition Score 3. This experiment used a Split-Plot design with 5 blocks. The first factor was electrical stimulation period ($a_1 = 1$ minute, $a_2 = 2$ minutes and $a_3 = 3$ minutes), the second factor was freezing period ($b_1 = 1$ month and $b_2 = 2$ months). The observed variables were pH, water holding capacity, cooking loss, tenderness. This research data is processed by analysis of variance (ANOVA) and Duncan Multi-Range Test (DMRT). The results of this study showed that there was no interaction effect ($P > 0.05$) between electrical stimulation and freezing duration on the physical quality of Silverside meat of Pesisir cattle. The duration of electrical stimulation had a very significant effect ($P < 0.01$) on cooking loss, which was the highest cooking loss at 1 minute electrical stimulation (36.12%), 3 minutes (30.46%), and the lowest cooking loss in electrical stimulation 2 minutes (28.90%), but the duration of electrical stimulation had no significant effect ($P > 0.05$) on pH, water holding capacity and tenderness, meat. The freezing period had a significant effect ($P < 0.05$) on tenderness, where the value of tenderness at 1-month freezing (4.61 Kg / cm²) was higher than the freezing of 2-months (4.08 Kg / cm²), but the duration of freezing had no significant effect. ($P > 0.05$) on pH, water holding capacity and cooking loss.

Key Words: Physical Quality, Silverside Meat, Pesisir Cattle, Electrical Stimulation, Freezing Duration

Growth Pattern of Layer Duck (*Anas domesticus*) Early Growing Period Through Protein Optimization

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ABSTRACT

This study aims to determine the growth pattern of Bayang Laying Duck in the early growing period through protein optimization. This study used 200 heads of Bayang virgin ducks aged 6 weeks. Ducks are kept in 20 cage sizes 225m². The study used a randomized block design pattern of 4 x 5 (10). Ducks are given rations with a protein content of 14%, 16%, 18% and 20% and iso-energy content of 2900 kcal / kg. There were groups as replications and each unit consists of 10 heads. The ration and drinking water are given ad-libitum. The parameters of the study were feed consumption, protein and energy intake, body weight gain, feed conversion and mortality. Growth patterns are shown through growth charts and the regression equation every week. This study resulted in an average Feed Consumption for each treatment 14, 16, 18 and 20% was 125.24; 125.31; 125.32 and 125.42 g / head / day ; Protein Intake 17,53; 20,05; 22,56 and 25,08 g / head / day ; Energy Intakes 363.19; 363.41; 363.42 and 363.72 kcal / day ; Weight Gain 164, 173, 179 and 195 g / head / week ; Feed Conversion 6.2; 5.9; 5.4 and 4.9, Mortality of 0%. Early growth patterns of Bayang Laying Duck tends to be quadratic with each the regression equation being $YA = -1.2296 + 0.3780 X - 0.0140 X^2$ (r = 0.9542) ; $YB = -1.0617 + 0.3278 X - 0.0103 X^2$ (r = 0.9609) ; $YC = -1.1041 + 0.3350 X - 0.0103 X^2$ (r = 0.9743), dan $YD = -1.2443 + 0.3361 X - 0.0109 X^2$ (r = 0.9788).

Key Words: Bayang Ducks, Growing, Performance, Growth Pattern.

Combination of Giving Probiotic *Pediococcus pentosaceus* Origin in West Sumatra with Different Dosage and Frequency on Cholesterol Levels, Triglyceride and Villi Intestine in Duck Bayang (*Anas Spp*)

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ABSTRACT

This study aims to test Lactic Acid Bacteria (BAL) obtained from BAL curd of *Pediococcus pentosaceus* originating from Sijunjung District with a concentration of 1.90×10^8 CFU / g as a probiotic to reduce cholesterol levels of Shrimp duck meat. The design used is a complete randomized factorial pattern design method. The first factor (A) is the dose of probiotics (BAL) given by the treatment of A1: 1 ml dose of probiotics (12.7×10^8 CFU / g); A2: 2 ml dose of probiotics (25.4×10^8 CFU / g); A3: Dosage of 3 ml probiotics (38.1×10^8 CFU / g). The second factor (B) is the frequency of administration during the study. Treatment B1: Provision of probiotics 0 times; B2: Provision of probiotics once; B3: Provision of probiotics 2 times; B4: Provision of probiotics 3 times; B5: Provision of probiotics 4 times; B6: Provision of probiotics 5 times; B7: Provision of probiotics 6 times. Each treatment consisted of 4 replications and each replication unit consisted of 4 ducks. The number of ducks used in accordance with the design was 346. The variables observed were food consumption, body weight gain, feed conversion, percentage of carcass, and cholesterol and intestinal villi. The study was conducted in Koto Tangah Subdistrict, Padang City. The results of the study of Biological testing of BAL *Pediococcus pentosaceus* given to male Shrimp ducks (*Anas Spp*) with a dose of 2 ml and frequency of giving 5 times can reduce duck cholesterol content on average 11.52 mg / dl, reduce triglyceride levels in duck meat on average 51.48 mg / dl and increase intestinal villi height averaging 12.90 mm.

Key Words: Duck Bayang, Probiotics, Cholesterol, Triglycerides, Intestinal Villi

A Preliminary Study: The Occurrence of Multi-drug Resistant Bacteria (MDRB) isolated from chicken farms at Kuala Selangor, Malaysia

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ABSTRACT

Poultry industries in Malaysia are forefront in meeting the demanding of the country's population. Poultry especially chicken meats and eggs are the most popular and considered inexpensive foods and largely contribution in supplying the protein need of the population. The annual production of eggs and chicken meat are valued between RM1.78 billion and RM6.03 billion. But however, poultry has been suggested to serve a major pathway for human expose to health problems. Nowadays multidrug resistant bacteria (MDRB) is a major public health problem challenging worldwide health care facilities including Malaysia. According to Infectious Diseases Society of America (IDSA), recognizes that the antimicrobial resistance as "one of the greatest threats to human health worldwide". Several issues were underlie the critical danger that is posed by the rise of MDR bacteria. The widespread use of antibiotics in animals has been raised several concerns and issues related to human and animal health. Therefore, the World health Organisation (WHO, 2000,2001) has recognised that it is important to continues monitoring to evaluate the resistance problems and detect trends and changes. The objective of this study is to investigate the preliminary study of the occurrence of MDRB using culturable antibiotic Chromogenic (CHROM) agar method selected in several chicken farms at Kuala Selangor. This study will give beneficial study on the occurrence and wide dissemination of MDRB at the chicken farms and wet markets especially in food safety and food security at Selangor. Thus, this findings will assist to serve as a useful guideline Food Safety Assurance to Veterinary or Public Health authority in designing evidence-based mitigation strategies for effectiveness controlling the MDRB in chicken farms and wet-markets. In Malaysia, it is demanding for organic chicken. This might be to aware the public on food safety issues of the used of veterinary drugs in conventional poultry produce.

Key Words: Multi-drug Resistant Bacteria, Chicken Farms, Chromogenic Agar

Oral
Presentation
Social Economic

**Social and Economic Analysis of Food Crops and Beef Cattle Sub Systems
in the Dry Land Area of Kupang Regency, East Nusa Tenggara Province,
Indonesia**

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ABSTRACT

This study aims to analyze the performance of food crop and beef cattle sub-systems in dry land area and analyze properties of social and economic factors of both sub-systems. The study was conducted in Pakubaun Village in East Amarasi Sub District and Pukdale Village in East Kupang Sub District, Kupang Regency. The method applied was survey and the data was analyzed by using 5 (five) agro-ecosystem properties. Results of the research were the economic properties namely productivity of both sub systems were low, while, efficiency and stability factors were high. Based on the social properties analysis, it was found that the equitability of food crops sub-system was low, and the equitability of beef cattle sub system was high. From autonomy point of view, the results of this study indicated that the autonomy in both sub-systems was high. Based on agro-ecosystems properties, in general, the performance of both sub-systems were not in low where out of five properties only two properties described the high conditions.

Key Words: Dryland, Food Crop, Beef Cattle, Agro-Ecosystem, Social Economic Properties

Basic Mapping Data of Jambi Province Potency for A Continuous Livestock Development Strategy

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ABSTRACT

Local commodity in Jambi Province consists of 20 kind of product for plantation area which in its entirety have the power of the biggest labour variation amount that is in plantation area (85%) followed by farm area (66,67%) and ranch area (63,64%). Technic to identify regional input contribution. As for the quantity of input resources variation becomes the measurement of : (1) the unit size of commodity area, (2) effort variation and effort specification, (3) amount of effort contribution, (4) alternative potency and prior potency of area effort that becomes a measurement. The result above can be used as precisely basic identification program in specifying program policy that is integrated to strengthen the commodity power. Jambi Province has the ability to apply integration program between farming-plantation, ranch (P3) to support reinforcement of self sufficiency in food and effort. The action of maintaining this final potential commodity can be taken as a recommendation to keep the stability of row and final material availability as commodity of area requirement accomplisher also can be developed contribusly to in Jambi Province are farming-ranch (100% for ruminacial/monogastry and 72,73% for poultry) and plantation-ranch(100% for ruminacial/monogastry and 0% for poultry) that is seen through local resources commodity. To answer the second problem in this research, it is stated that the lowest standard pattern that can be done in developing local resources program to maintain food is by P3 pattern (Plantation, Ranch and Farming). Basic mapping data horizontally, the plantation mapping possesses 3 area categories of commodity green zone A , orange zone B and C yellow zone. Sub-provinces with green zone commodity area 1,2,3,4,5,6,7,8,9. Zone B in sub-province (none), 5,6,7,8,9,11 and C Yellow zone sub-province is 10. Horizontally farming mapping owns 3 (three) area categories of commodity A green zone, B orange zone (none) and C yellow zone. Sub-province with green zone commodity are 1,2,3,4,5,6,7,8,9, zone B in sub-province in none and C yellow zone in sub province are 10,11. while horizontally ranch mapping owns 4 area categories commodity. For Non Poultry livestock, B (non poultry livestock). Sub province non poultry livestock 1,2,3,4,5,6, Zone B (7,8,9,10,11), zone poultry livestock (1,2,3,4,5,6,7,8), B (9,10,11). while Vertically ranch mapping owns 4 zone, they are active/high potency (A1,A2) non poultry livestock and poultry livestock conservation zone B and C.

Key words: Basic, Mapping, Potency, Livestock, Continuous

Competitiveness of Indonesian Beef Trading in Asean

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ABSTRACT

Indonesian beef consumption is 2.61 kg/capita/year, lower than other Asean countries, such as Malaysia 15 kg and Philippines 7 kg per year. The objective of this research is to analyze the competitiveness of Indonesian beef trade among ASEAN countries. This type of research is quantitative descriptive, using secondary data on imports, exports, and beef production in 2013-2017 from FAO and ITC. Data were analyzed using Index of Trade Specializations (ITS), Revealed Comparative Advantage (RCA), and Self Sufficiency Ratio (SSR). The results showed that the value of ITS Indonesia (-1.00) was similar to that of the Philippines (-1.00) and Vietnam (-1.00), and below Myanmar (-0.99), Cambodia (-0.98), Brunei (-0.94), Singapore (-0.69), Laos (-0.68), Thailand (-0.57), and Malaysia (-0.49). Figures $-1.00 < ITS < -0.50$ indicates that Indonesia and other Asean countries tend to be importers of beef. The value of RCA Indonesia (0.04) is equal to Malaysia (0.04), above Myanmar (0.00), Cambodia (0.00), Vietnam (0.00), Philippine (0.00), and Thailand (0.03), but under Laos (0.07). The near-zero RCA figure indicates that Indonesia and other Asean countries have low comparative advantages in beef trade. The value of SSR Indonesia 86%, means that Indonesia is able to meet 86% of beef needs by domestic production. Indonesia's SSR figures are below Myanmar (100%), Cambodia (99%), Laos (99%), and Thailand (94%). The results conclude that Indonesia has a low competitiveness in beef trade among ASEAN countries and is able to meet 86% of domestic beef needs.

Key Words: competitiveness, trade, beef

Profit Analysis of Broiler Chicken Business in Beringin Village Deli Serdang Regency

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ABSTRACT

Broiler breeders conduct farm business aims to benefit by utilizing resources optimally. Broiler breeders should conduct an analysis of business profits to measure the success of business activities, to know the main component of income and determine which components can still be improved or not. The purpose of this study is to analyze the benefits received by broiler farmers in Beringin village Deli Serdang. This type of research is quantitative descriptive research that describes the condition variables: revenue volume businesses broiler chickens. The populations in this study are all broiler breeders in Beringin village. The sampling method used was census with sample size was 35 breeders. The analytical method used is income analysis and business feasibility analysis. The result of research of income and business feasibility analysis is broiler breeding business profitable and feasible to be done by farmers in Beringin Village, Deli Serdang Regency.

Key Words: Broiler Chicken, Business Feasibility, Income, livestock, Profit Analysis

Purchasing Decisions Behaviour of Beef Consumer in Kendari (Case Study in Mandonga Traditional Market)

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ABSTRACT

The demand of beef in Kendari City in the current is likely to increase every year in line with the increasing public awareness of the fulfillment of nutrition, especially beef as an animal source of protein. In connection with this need to know the reasons consumers in beef purchase. This study aims to identify and analyze consumer behavior in purchasing decision of beef in Kendari City. This research was conducted in traditional market of Mandonga Kendari City between June until July 2017. The sample of respondents of this study are consumers who buy beef in Mandonga traditional market, who taken by accidental non probability procedures as many as 90 people. The variables measured on consumers who purchase beef are the physical properties of beef, perceptions of prices, beef portion, purchase amount, ease of access, seller service, purchase frequency, number of family members, education level and income level. Data were collected and analyzed descriptively qualitative and quantitative. The results showed that consumer behavior in purchasing decision of beef in Kendari consider on: (1) color (53,3%), (2) perception of normal price (80%), (3) purchasing frequency 2-3 times a week 43.3%, (4) on average every purchase of 2-5 kg (51.1%), (5) combination of beef portion purchased (38.9%), (6) ease of access and availability of beef daily routine (41.1%) and (7) friendly service (40%).

Key Words: Behaviour, Beef, Purchasing, Consumer, Perception

Native Chicken as Income Source during Palm Replanting Season

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ABSTRACT

This research purpose is to look at another income source for farmers during palm replanting season, as a source of income for farmers to do chicken breeding efforts to get another source of income during palm replanting season. The method for this research is to use the survey method, sample taken by purposive sampling samples are farmers that breeds chicken during palm replanting. primary data taken directly from farmers, secondary data taken from related government agency. Respondents total as much as 33 farmers. From the results of the survey obtained, income from chicken breeding is as much as Rp. 1.965.000.

Key Words : Native Chiken, Income, Replanting

Extension Methods in Adopting Reproductive Biotechnology Innovation for Cattle Breeding in Dharmasraya District, West Sumatera

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ABSTRACT

A study had been carried out from May to July 2016 to evaluate the extension methods utilized in adopting process of reproductive biotechnology innovation for beef cattle breeding in Dharmasraya district, West Sumatra. Following a survey method, 40 farmers of using Artificial Insemination (AI) and 14 farmers of using Embryo Transfer (ET) were interviewed. Those farmers were chosen by quota sampling method and saturated sampling method respectively. Both primary and secondary data were analyzed by descriptive and quantitative approach using Likert scale. The results showed that extension methods operated by extension workers consisted of three types; home and farm visit; demonstration and campaign.

Key Words: Extension methods, Reproductive Biotechnology, Cattle Breeding

**Analysis of Determinant Factors of Profit Efficiency On Quail Farming
Located in district of Payakumbuh Regency of 50 Kota**

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ABSTRACT

Demand for egg consumption in Indonesian society being one of the great opportunities to establish quail farms industry. The goal of this research is to measure number of profit and to identify the affecting factors of profit efficiency on quail farms in Regency of 50 Kota. Cross section data obtained from quail farmers were used. Thirty samples from quail farm level with scale ≥ 5000 birds selected by accidental sampling were obtained. Income analysis and Stochastic Frontier Analysis (SFA) were used for statistical analysis. This study exhibited a considerable capacity to improve quail profitability. Feed price, cost of breeds, and scale of farm were considerable factor influencing farmer income efficiency; whilst age, education, dummy of market assurance were defining factor of inefficiency.

Key Words: Quail Farming, Efficiency, Profit, Stochastic Frontier Function

Analysis of Prospects for the Application of Integrated Farming System Models for Lowland Rice with Beef Cattle to Strengthen Farmers Economy in West Sumatra

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ABSTRACT

Crop-Livestock-System (CLS) is an agricultural system approach that can improve business efficiency, maintain land fertility and realize sustainable agriculture, especially on small-scale agriculture. This research was conducted in Gunung Talang Subdistrict, Solok Regency, West Sumatra, aimed to find out the habits of farmers and the potential to integrate and calculate farmers' income if they only do one commodity farming, namely rice, or rice and cattle. Data collection was conducted from June to August 2018 using survey methods. Data collection was carried out through interviews with 30 lowland rice farmers as respondents, randomly selected. Data collected includes crop and livestock farming data such as: farmer characteristics, average rice field area, average productivity and production value, average number and value of inputs (seeds, inorganic fertilizers and organic fertilizers, and organic and inorganic pesticides, the average supply of labor in an integrated farming system between plants and cattle. The results showed that average rice yield was 5.74 tons/ha of dried ground rice. The use of inorganic fertilizer urea 100 kg/ha (N 71.43%), SP-36 50 kg/ha (50%), KCl 50 kg/ha (50%). The income of farmers with only rice Rp 11,816,807 for ones hectare land. Total income from paddy (1 ha) and livestock (2 heads) integrated farming system about Rp 17, 612,405/season and provide R/C value about 1.44, meanwhile R/C value of non integrated farming system about 1.33. It means, paddy and livestock integrated farming system could increase farmer's income about 49,45% per season compared to non integrated farming.

Key Words: Integration, Paddy, Livestock, Farmer Income

**Cost of Goods Sold Analysis of Banana Bunch Chicken Nuggets in the
Women Farmers Group “KWT Kebersamaan” in District of Padang
Pariaman**

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ABSTRACT

Chicken nuggets are one of the products of meat processing technology that has good nutritional value and affordable prices compared to processed beef products. Despite having a fairly complete and good nutritional content, chicken nuggets contain high fat and low fiber. To increase the nutritional value of chicken nuggets, the Women Farmers Group “*KWT KEBERSAMAAN*” tried to make processed nugget with the ingredients of banana bunch and chicken meat. This study aims to analyze the cost of production and the cost of goods sold in banana bunch chicken nugget. Data used in this study were primary data from the company and secondary data obtained through literature in line with the title of the study. Method of calculating the cost of production and the cost of goods sold in this study is to use the full costing method and variable costing method. Results of this study showed that the calculation of the cost of production is higher in value with the full costing method compared to the variable costing method while the calculation of the cost of goods sold is higher than the selling price with the variable costing method than the full costing method.

Key Words: Cost of Goods Sold, Banana Bunch, Chicken Nuggets

The Sustainability Index of Dairy Cattle Area in Padang Panjang City

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ABSTRACT

This study aims to analyze the sustainability status of dairy cattle based livestock areas in Padang Panjang City West Sumatra from the five dimensions of sustainability (ecology, economics, socio-cultural, technological-infrastructure, and legal-institutional) and identifies key influential factors in the future development of the system. This research uses Multidimensional Scaling (MDS) method of analysis which results are expressed in the form of sustainability index. The result of the index of sustainability using approach Rapid Appraisal of Dairy Cattle Breeding System yielded the value of 55.09. Based on these values, the sustainability index of dairy cattle breeding system in Padang Panjang City is categorized as “quite sustainable”. An increase in the value of the sustainability index can be done by improving the 15 sensitive attributes of 45 attributes of the system’s sustainability assessment. Analysis of dependency between factors using prospective analysis resulted in 7 (seven) key factors influencing the development of dairy farming system. The key factors are: (1) milk price, (2) feeding capacity, (3) feed industry, (4) utilization of livestock waste, (5) job socialization, (6) development of cooperative, and (7) microfinance (bank/credit). In order to improve the sustainability status for the future (long term), the scenario that needs to be done is a progressive-optimistic scenario by making a thorough improvement on all the sensitive attributes in enhancing the status of the region.

Key Words: Status of Sustainability Ecological, Economic, Socio-Cultural, Technological-Infrastructure, Institutional-Law Dimensions

Young Generation Perception of *Dadiah* (Fermented Water Buffalo Milk) as Traditional Food of West Sumatera

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ABSTRACT

This study aims to determine student perceptions as a young generation towards the development of *dadiah* as a traditional food in West Sumatera. This research was conducted on 12 March - 02 April 2018. The method used in this study was a survey method, with a total of 100 respondents. The analysis was carried out with a likert score on variables derived from the marketing mix component of a product. Based on the results of the study, it was found that 87 students who knew with curd (87%), who did not know 13 people (13%), who consumed 78 people (78%), who did not consume 22 people (22%), who liked 40 people (40%) and who don't like 38 people (38%). Student's perception of the development of *dadiah* is, 95% stated that *dadiah* is further processed so that it is preferred for consumption, 90.17% stated that *dadiah* must be promoted through social media, and 94.17% said that *dadiah* was retained for sale in traditional markets.

Key Words: Young Generation Perception, *Dadiah*, Product, Promotion, Place

**Study of the Application Technical Aspects of Pesisir Cattle in Several
Regions in West Sumatra to Maintain the Existence of this Native
Indonesian Beef Cattle**

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ABSTRACT

Pesisir cattle are native Indonesian germplasm living in the coastal areas of West Sumatra. Pesisir cattle population was to decline from year to year. This research aims to examine the technical aspects of the maintenance of pesisir cattle in several regions in West Sumatra to maintain the existence of this native Indonesian beef cattle. The research method used is a survey. The research location was determined based on the distribution of Pesisir cattle in several regions in West Sumatra, namely Pesisir Selatan Regency, Pasaman Barat Regency, Padang Pariaman Regency, Agam Regency and Padang City. Data analysis was done by tabulation and scoring in accordance with the Guidelines for Animal Husbandry Technical Aspects of the Directorate General of Animal Husbandry in 1992. The results showed that the technical maintenance of Pesisir cattle in Pesisir Selatan District, Pasaman Barat Regency, Kabupaten Padang Pariaman, Kabupaten Agam and Kota Padang were in the medium category with Scoring scores averaged 70%. This shows that Pesisir cattle breeding techniques in West Sumatra still need to be considered so that the native Indonesian cattle population can continue to grow.

Key Words: Pesisir Cattle, Technical Aspects, West Sumatera

Increasing Livestock Competitiveness with Regional Innovation Systems (Case in Padang Panjang City, West Sumatra Province)

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ABSTRACT

This study examined livestock agribusiness systems with a macro analysis approach. This approach views agribusiness as an industrial system unit in terms of innovation policy, institutional and innovation programs and innovation capacity. The aim of the research was to identify the maturity level of livestock innovation systems using *ANIS* method (Analysis National Innovation System). Method of analysis in livestock competitiveness research macro in the city of Padang Panjang used the survey method of expert opinion. The data were analyzed using a Likert Scale. The results showed that the maturity level of the livestock innovation system was still at a growing level (2.5) and not yet reasonable (3-4). The cause is the lack of effective implementation of innovation policies, innovation institutions and programs and lack of capacity innovation in the development of the livestock industry.

Key Words: Competitiveness, Livestock Agribusiness, ANIS, Regional Innovation Systems

Animal Food Consumption Patterns of Households in West Sumatera Province: Use of Almost Ideal Demand System (AIDS)

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ABSTRACT

Household demand for animal food in West Sumatera Province have increase trend for over time. In the future, it is estimated to increase along with increasing income, education level, awareness of nutrition, population growth and the number of middle class. Accurate models are needed to estimate the demand for animal food consumption in West Sumatera for the preparation of appropriate policies and programs in the supply of animal foods. This study aims to analyze the pattern of animal food consumption of households in West Sumatera Province which consists of beef, chicken, egg and fish using the right model, namely the Almost Ideal Demand System Model (AIDS). Then calculate the elasticities of household food demand in the Province of West Sumatera. The research variables were the amount of meat consumption, household expenditure, expenditure on food, expenditure on meat, meat prices and sociodemographic aspects which included the number of household members of the household, maternal age and the level of education of housewives. The results showed that the diversity of household animal food demand as much as 54% was caused by the diversity of beef prices, the price of chicken meat, the price of egg and fish, the number of household members, the level of maternal education and the age of the housewife.

Key Words: Animal Food Consumption, Household, Modified Almost Ideal Demand System (AIDS) Model

Oral
Presentation
Technology of Animal Product

Characterization of Physical, Chemical and Microbiological Properties of Colostrum of Freis Holstein Dairy Cow (FH)

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ABSTRACT

Colostrum from dairy cows FH is a quality material to be used as an additional food ingredients naturally, especially for dairy products. However, fresh colostrum is not durable, therefore drying for further applications. The purpose of this research is to know the physical, chemical, and microbiological properties of colostrum from FH dairy cow that is made in dry powder form. The material used is fresh colostrum from dairy cow FH from farming people in Kemiri Jabung village, collected gradually from milking first day until third after partus, with sampling as much as 250 ml per head of cow and collected from 5 cow FH, research done in July-September 2017. The tool used is oven (Mettler), analytical scale (Sartorius), glassware, tray (baking), and philips mixer. The research method used is quantitative description and laboratory analysis for physical quality variables (color and texture), chemical quality (moisture content, fat content, and protein content). The results of dry colostrum research in oven with 60 oC initial temperature has a yellow color and sandy texture, water content of 9.63%, protein content of 3.79%; FFA of 6.50%; and crude fat 7.15% and can inhibit the growth of *E. coli* and *Bacillus cereus* bacteria at concentrations of 1750 ppm. The conclusion of the quality of physicochemically and microbiologically produced dry colostrum can be used as an antimicrobial agent in food applications, by inhibiting the pathogenic bacteria of *E. coli* and *B. cereus* digestion, and applied to food products.

Key Words: Dry Colostrum, Drying, Quality of Colostrum

Freezing Method of Rosella Flower (*Hibiscus sabdarifa* Linn) in Se'i Meat (Timorese smoked meat) on Physico-Chemical and Microbiological Quality

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ABSTRACT

The experiment was conducted to evaluate influences of using rosella extracts (*Hibiscus sabdarifa* Linn) with *freeze drying method* in processing of daging se'i (timorese smoked beef). Completely Random Design (CRD) was applied for the trial with factorial pattern of 6 x 2. Every combination of the treatment consists of 3 (three) times of replicates. There were six level used comprise: a control treatment, 4cc, 5cc, 6 cc, 7cc, 8 cc, and 9 cc; include two kinds of ingredient such as the extract of rosella. Some parameters analyzed comprise physical and organoleptic characteristics cover: color, fragrance, taste, tenderness, and pH; while the chemical parameter covers: residue of nitrite; then the parameter of biological characteristic (microbe) covers: total plate count (TPC). Data were analyzed using a non-parametric test kruskall-wallis for the physical and organoleptic characteristics. A microbiology test applying Anova (Analysis of Variance) using a continual test of Turkey HSD SPSS 19 (Prastito, 2009). On the other hand, the data for the nitrite residual test were done descriptively, by comparing the level of nitrite as a result of laboratory analysis with the level of nitrite on a maximum border according to the rule of Health Department – The Republic of Indonesia. The research result showed that rosella, as well as have a very significant influence for the organoleptic parameters, physical, chemical dan mikrobiological.

Key Words: Se'i Meat, Rosella Extract, Freeze Drying Method, Physical, Chemical Organoleptic, Mikrobiological Characteristics

Chemical Characteristics and Microbiology of Mozzarella Cheese from Pampangan-South Sumatra Buffalo Milk with Addition *L. Plantarum* Probiotic

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ABSTRACT

Mozzarella is an Italian cheese made from cow's milk and buffalo milk. To increase its functional and economic value, probiotic bacteria can be added to mozzarella cheese. The purpose of this study was to determine the quality of probiotic mozzarella cheese from buffalo milk with the addition of single probiotic BAL culture *L.plantarum* SKP10, including chemical characteristics and microbiology. Probiotic cheese made from Mozzarella cheese of Pampangan's buffalo milk and given the addition of LAB probiotics which was isolated from Pampangan's buffalo milk that has been encapsulated. The making process of Mozzarella cheese is done according to Ortakci et al. (2012) with some modifications. The treatment in this research is the level of *L.plantarum* SKP10 probiotic concentration which were added to Mozzarella cheese: 2%, 4% and 6%. Quality testing includes: chemical quality testing (AOAC, 2005) and microbiological testing (Burn et al 2008 and BAM 2001). Mozzarella cheese probiotic from Pampangan's buffalo milk that has been produced with treatment of *L.plantarum* SKP10 produced the same chemical characteristics for moisture, protein, fat and ash content. The viability of LAB probiotics in Mozzarella cheese that qualified as functional food was in the probiotic addition of 2% minimally (w/v) with population of LAB probiotic was $8 \log \text{ cfu g}^{-1}$. Mozzarella cheese probiotic was made of probiotic isolate from indigenous Pampangan's buffalo milk (*L.plantarum* SKP10 isolate) and has the potential to be developed as a functional food.

Key Words: Mozzarella Cheese, Pampangan's Buffalo Milk, Probiotics

Nutritional Quality of Probiotic Fermented Milk During Storage at Refrigerator

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ABSTRACT

The fermented goat milk was inoculated with probiotic bacteria, *Lactobacillus fermentum* NCC2970. The aim of this study was to evaluate the nutritional quality of probiotic fermented goat milk during storage at the refrigerator. Completely randomized design was used with 4 storage times; (A). 1 day, (B). 5 days, (C). 10 days and 15 days with 5 replicates. Storage time affected fermentation significantly ($P < 0.05$), lowered water content and fat levels and increased the level of protein, total solids and viscosity. Based on the results of this research it can be concluded that goat milk fermented with *Lactobacillus fermentum* NCC2970 can maintain nutritional quality up to 15 days in cold storage.

Key Words: Probiotic, Fermented Milk, Storage, Nutritional Quality, *Lactobacillus fermentum* NCC2970

Organic Fertilizer Characteristics of Cow Feces Using the Indigenous microorganisms (IMO) from Livestock Feces

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ABSTRACT

Feces livestock is potentially exploited and processed into Indigenous microorganisms (IMO) and organic fertilizers because of the large number but usually rarely processed, instead causing water and air pollution. IMO are a kind of biological products can be used as decomposers in the manufacture of organic fertilizers, but almost unknown to the public. The IMO of livestock feces are cheaper, easier to produce and economical than IMO of commercial products such as EM4 or others. IMO were made using experimental method, complete randomized design, 5 treatments of some livestock feces namely: cow, goat, rabbit, quail and chicken and 4 replications. The resulting IMO was analyzed for moisture content, pH, total plate count, bacterial colony forming of lactic acid bacteria, and fungal colony forming. Then IMO was applied in making organic fertilizer from cow feces with fermentation time 21 days then analyzed level of moisture content, pH, N, P, K, and C/N ratio. If the results of the varied finger print effect then proceed with Duncan's test. Based on the research results obtained IMO of quail fries produce organic fertilizer with the highest N, P, K content.

Key Words: Fermentation, Cow Feces, Livestock Feces, IMO, Organic Fertilizer

Characteristics of Edible Film Made From Whey with Laktat Acid Bacteria from Tempoyak as Probiotics Packaging

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ABSTRACT

Edible film made from whey, a waste obtained from milk and used as primary packaging. This research aimed at isolated and identification of lactic acid bacteria derived from tempoyak, subsequently applied in the manufacture of edible film and have the properties of probiotics. Physical properties measured from edible film is water content, pH, solubility and thickness of the time. This research uses material from waste milk whey and tempoyak. The method used is an experiment using random design group that consists of four isolates tempoyak addition treatment A (0%), B (4%), C (8%), into a solution of whey and six replicates. Treatment results shows to a thickness ranging from 0.20-0.25 mm and already meet the standards JIS 1975.

Key Words: Edible Film, Tempoyak, Whey, Lactic Acid Bacteria, Probiotics

Manufacture and Quality Improvement of Concentrated Yogurt from Cow's Milk

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ABSTRACT

Concentrated yogurt is one of fermented milk products which often considered as functional food. The manufacture of concentrated yogurt from fresh yogurt requires partial whey separation in order to obtain soft, creamy-like, and nutrients-densed products. Concentrated yogurt can be considered as one of functional milk products, with longer shelf-life and broader application than fresh yogurt. To date, limited information is available on the suitability of local cow's milk in Indonesia for manufacturing concentrated yogurt. Therefore, this study was aimed to determine the quality and processing characteristics of concentrated yogurt manufactured from local cow's milk. The final goal of this study is to establish a standardised procedure to manufacture concentrated yogurt from local cow's milk with functional characteristics.

Unpasteurised fresh milk of morning milking was purchased directly from a local dairy farmer in Banyumas area, Central Java, Indonesia. The milk was taken to the laboratory in a milkcan, and pasteurised in a stainless steel container at 85°C for 15 minutes; then the milk was cooled down to 40°C. Plain yogurt was manufactured from the milk by adding a previously activated lyophilised yogurt starter culture containing *L. bulgaricus*, *S. thermophilus*, and *L. acidophilus*. Fermentation of the milk was performed at 40°C for 4 hours. The resulting plain-fresh yogurt is used to manufacture concentrated yogurt. Partial whey separation was done by draining plain yogurt in a nylon bag of cheese cloth. Initially, the observation was focused on the changes in pH, lactic acid, and total solids contents of yogurt during whey separation up to 10 hours under a controlled environment. Then, in order to improve yield and textural characteristics of the products, inulin and xanthan gum was added to the plain yogurt, prior to whey separation. Variables observed include pH, titratable acidity, yield, sineresis, whey, and texture.

Results showed that concentrated yogurt with desirable quality characteristics can be manufactured from local fresh cow's milk. Most whey was drained/separated in the first two hours, and continued gradually up to 10 hours. The addition of polysaccharide prior to whey separation was able to retain some whey, and hence higher yield. On average, concentrated yogurt from local cow's milk contains 0.15% titratable acidity, pH of 3.5, and 40.6% total solids. The product posses desirable textural characteristics, that is soft and creamy with paste-like consistency. The nutritional composition and shelf life of the product still need further investigation.

Key Words: Concentrated Yogurt, Fermented Milk, Whey Separation, Local Cow's Milk

The Effect of Whippy Cream Adding on The Quality of Frozen Soyghurt as Synbiotic Ice Cream

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ABSTRACT

The presence of Lactic Acid Bacteria (LAB) in food is very important, as most of these LAB have beneficial effects in human body, so most LAB are generally potential as probiotics. This study aims to determine the quality of frozen soyghurt/synbiotic ice cream with the addition of whipping cream. Synbiotics is an ingredient and foods that contain both probiotics and prebiotics that beneficially affects the host by improving the survival and implantation of live microbial dietary supplement in the gastro intestinal tract. Prebiotics is a non-digestible food ingredient such as oligosaccharides substrates that match the enzymatic glycosidies hydrolase capacity of health promotion bacteria, that elicits the selective stimulation of growth and/or activity of one or a limited number of microbial genus/species in the gut microbiota that converts health benefits to the host. Soyghurt is one of the ingredients that includes synbiotics. This study began by making a synbiotic drink/soyghurt by inoculating *Streptococcus thermophilus* and probiotics isolated from okara is *Lactobacillus plantarum* SRCM 1 004 34 strain into a mixture of cow's milk and soy milk containing prebiotic, and then freezing it so that it is expected to produce a healthy Synbiotic Ice cream. This research was conducted experimentally using Completely Randomized Design with 4 treatments and 5 replications. The treatment is the addition of whipping cream with Soyghurt with the ratio: A = Whipping cream:Soyghurt (10:90), B = Whippy cream:Soyghurt (20:80) C = Whippy cream:Soyghurt (30:70) and D =Whippy cream:Soyghurt (40:60). The variable was observed the quality of frozen soyghurt that consisted of protein and fat content, pH, Lactic Acid Bacteria count, overrun, melting point and sensory evaluation. The result of the research indicated that the adding of whipping cream in frozen soyghurt making was significantly increased fat content, pH, overrun, melting point, texture and decreased protein content, Lactic Acid Bacteria count and flavour of frozen soyghurt. The conclusion is the addition of whipping cream up to 40% (D) has produce frozen soyghurt with good quality yet.

Key Words: Frozen Soyghurt, Probiotic, Prebiotic, Synbiotic, Whipping Cream

**Study of Chemical Properties and Microbiology of River Buffalo Milk in
District of Deli Serdang, North Sumatra**

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ABSTRACT

The purpose of this research are to know the chemical properties and microbiology of river buffalo milk to supply a national milk requirement. The research was conducted in buffaloo river farm in district of Deli Serdang, Nort Sumatra. The method used in this study was survey purposive sampling and the variables were chemical properties (moisture, content of protein, fat and lactose) and microbiology (Total Plate Count and Lactic Acid Bacteria) of river buffalo milk. The results showed that chemichal properties of buffalo river were 85.32% of moisture, 4.13% of protein, 3.58% of lactose, and 6.10% of fat. For microbiology the milk has 1.8×10^5 CFU/ml of total plate count and $1,3 \times 10^2$ CFU/ml of lactic acid bacteria. The conclusion is the chemical properties and LAB count of river buffalo milk are in standard range yet, but has highest contamination in TPC.

Key Words: River Buffalo, Chemical Properties, Microbiology, Milk

Influence of Starter with Red Dragon Fruit Juice (*Hylocereus polyrhizus*) to Thin Layer Chromatography (TLC) and Fourier Transform Infrared Spectroscopy (FTIR) of Yogurt

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ABSTRACT

This study aims to determine the content of compounds formed from red dragon fruit juice and yogurt adding red dragon fruit juice through Thin Layer Chromatography (TLC) and Fourier Transform Infrared Spectroscopy (FTIR) tests. Method used was descriptive including testing of dragon fruit juice including IC50, antioxidants, phytochemicals, and TLC testing and FTIR on red dragon fruit extracts and yogurt red dragon fruit juice. The results showed that the extract of red dragon fruit had IC50 values of 5.71 ppm, antioxidant activity of 51.51%, positively containing phenolic compounds and flavonoids, indicating the presence of flavonoids in marked FTIR from phenolic compounds or flavonoids which have OH groups and aromatic rings marked by function groups C = C. TLC with Rf value 0.75, and yogurt spots with dragon fruit juice with Rf value of 0.67, and showed the presence of flavonoid compounds in red dragon fruit juice and yogurt red dragon fruit juice. From this study it can be concluded that the fermentation process and the addition of red dragon fruit juice results in the formation of flavonoid compounds and the possibility of forming new compounds.

Key Words: Yogurt, Red Dragon Fruit Juice, Flavonoid, TLC, FTIR

The Chemical Characteristics of Yoghurt (*Lactobacillus fermentum* MGA40-6 and *Streptococcus thermophilus*) with addition of Senduduk Fruit Puree (*Melastoma malabathricum*, L.)

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ABSTRACT

The aim of this research is to know the influence of addition senduduk fruit puree on chemical characteristics of yoghurt. The method used is experiment with a completely randomized design (CRD) 1 factor that is with addition of senduduk fruit puree A (0%), B (1.5%), C (3%), D (4.5%), dan E (6%). The result of this study showed that the addition of senduduk fruit puree were significant ($P < 0.05$) to increased the nutritional value based on total titratable acidity, protein, antioxidant activity and decreased of pH value, but not significant to moisture and ash of yoghurt. In conclusion, the addition of senduduk fruit puree as much as 4.5%, its best to produce yoghurt with total titratable acidity (1.54%), protein (5.18%), antioxidant activity (56.72%), pH (4.4), moisture (77.59 %) and ash (1.22%).

Key Words: *Lactobacillus fermentum* MGA40-6, yoghurt, senduduk fruit puree, chemical

**Foodedutourism “from Farm to Table”: Review of New Alternative on
Agriculture, Animal and Food Sciences based Tourisms**

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ABSTRACT

Edutourism has been a new tourism category which being alternative toward common tourism classes such as mountain tourism, sea tourism, and cultural tourism. As its name, this tourism class focused to explore the scientific approach to explain and to bring the mind of visitor to thinking academically on the special sites, phenomenon, or process provided. So far, the development of edutourism mostly involves the agriculture related sites and animal related sites. Food as a part of human daily need has large potency to be explored as part of tourism. Thus, combination of food with agriculture and animal in term of “Edutourism from farm to table” could be a new approach to create new segment of edutourism. Practice trough feed sources, animal production, and laboratory class which simplifying with the visitor background is an interesting approach to lead them unites with food they eat every day. Awareness elevation on food consumption based on healthy, nutritious, delicious as also prepared in good preparation manner is targeted to the visitors.

Key Words: Tourism, Education, Animal, Plants, Animal, Food

Variation in Fermentation Length of Soyghurt Microbiological Quality using *Lactobacillus Plantarum* IDY L-20

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ABSTRACT

Yogurt is a functional beverage that has long been consumed. Yogurt can be made from soy milk or a combination of soy milk with cow's milk known as soyghurt. Efforts made to produce quality soyghurt were using inoculums in the form of lactic acid bacteria isolated from soybeans or soybean processing industry waste. The objective of this study was to obtain the best fermentation time for microbiological quality of soyghurt using *Lactobacillus plantarum* IDY L-20 isolated from solid waste making soy milk. The material used in this study is *Lactobacillus plantarum* IDY L-20, as an inoculum isolated from soymilk home-industry waste, dairy milk, soymilk, MRS-Broth (Merck), MRS-Agar (Merck). This study was conducted experimentally by using a completely randomized design (CRD) with four treatments and four replications. The treatments were T1, T2, T3, and T4, respectively for 8, 16, 24 and 32 hour. Parameters observed were pH, viscosity, total acid, total lactic acid bacteria (LAB) and total sugar. The results showed that the length of fermentation had significant effect ($P < 0.05$) on pH, viscosity, total acid, total lactic acid bacteria (LAB) and total sugar. The longer fermentation time causes a decrease in pH value (4.55-4.12) and an increase in total acid (0.72-0.90 ml). The highest viscosity (915cP) was obtained in T4 treatment by fermentation for 32 hours and the lowest viscosity at T1 (8 hours). The highest total lactic acid bacteria obtained in T4 treatment is 11.09 cfu. On the contrary, the lowest total sugar reduction was found in T4 treatment, which was 3.09%. In conclusion, the best treatment for making soyghurt was T3 (24 hour fermentation length) with pH (4.14), viscosity (996cP), total acid (0.87%), total LAB (12.01 cfu/ml) and total sugar (4.37%).

Key Words: *Lactobacillus plantarum* IDY L-20, Soyghurt, Fermentation, Viscosity

Bacteriocin from *Lactobacillus plantarum* as Biopreservative for Chicken Sausage

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ABSTRACT

Bacteriocin was protein compound produced by BAL which has bactericidal properties. *Lactobacillus plantarum* isolated from solid waste of soybean milk is a lactic acid bacteria that can produce bacteriocin. Bacteriocin can be used as a natural preservative in sausages, where this bacteriocin will inhibit the growth of pathogenic bacteria in sausages so that the symptom is longer. The use of bacteriocin as a natural preservative in food must be appropriate, both in type and dosage. Therefore, a study was conducted to determine the dose of bacteriocin *Lactobacillus plantarum* mxg 68 as an alternative to natural preservatives for chicken meat sausage quality. The material used in this study was *Lactobacillus plantarum* MXG 68 isolated from solid waste of soy-milk production, MRS-Broth (Merck), PCA (Merck), this research was conducted experimentally using a completely randomized design (RAL) with four treatments and four replications to obtain 16 experimental units. The treatments in this study were bacteriocin doses, namely: T1 = 0% bacteriocin, T2 = Bacteriocin 0.2% (v / b), T3 = Bacteriocin 0.3% (v / b), and T4 = Bacteriocin 0.4% (v / b) with three replications. Parameters observed were the physical, chemical and organoleptic quality (hedonic test) of sausage during storage time (0, 3, 6, 9 and 12 hours). The data obtained were analyzed statistically using ANOVA and DNMRT at a level of 5%. The data obtained showed that differences in bacteriocin levels had a significant effect ($P < 0.05$) on water, ash, protein and fat content, pH and sensory assessment of color, aroma, texture and overall sausage assessment. The best treatment in this study was T3 (0.3% Bacteriocin) which had an average water, ash and protein content respectively 58.65, 2.97, 16.07%, while the pH value and total plate count were 5.6 and 0.4×10^2 coloni/gram. In conclusion, the addition of 0.3% bacteriocin as a natural preservative in chicken sausages can maintain the quality of sausages during nine days of storage and this sausage meets the classification of SNI 01-3820-1995.

Key Words: Bacteriocin, *Lactobacillus plantarum*, Biopreservative, Chicken Sausage

**Characterization of Lactic Acid Bacteria Isolated From *Arenga pinnata*
Merr. as a Probiotic in Limapuluh Kota District West Sumatra Indonesia.**

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ABSTRACT

Limapuluh Kota in West Sumatra Province, Indonesia a district located in the optimum state to produce sugar palm that have a potential for *sap* production (Nira Aren). It contains 16-18% of sucrose and other nutritional components that are good for the growth of microorganisms, one of which lactic acid bacteria. The study aimed to characterize and determine the species of lactic acid bacteria isolated from Nira Aren which has proven produced the good quality of probiotic in Limapuluh Kota that identifying by macroscopic, microscopic and molecular using 16S rRNA technique. The results showed the isolate is namely *Lactobacillus fermentum* SNUV 175 with morphology bacil, gram positive, catalase negative and heterofermentative. Various bacteria belonging to the *Lactobacillus* genus (including *L. fermentum*) are commonly used as probiotics.

Key Words: *Arenga pinnata* Merr, probiotics, lactic acid bacteria, *Lactobacillus fermentum* SNUV 175

Sensory Profiling and External Preference Mapping of Prebiotic Burger Developed from White Oyster Mushroom (*Pleurotus Ostreatus*) and Chicken

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ABSTRACT

The aims of this research were two folds : (1) to determine the level of consumer preferences of prebiotic burger developed from white oyster mushroom (*Pleurotus ostreatus*) and chicken, (2) to map sensory attributes of the prebiotic burger. The research was carried out by performing an experiment to develop the prebiotic burgers with seven compositions of white oyster mushroom (J) and chicken meat (A), respectively, as follows: JA1 (oyster mushroom 0:4 chicken), JA2 (1:3), JA3 (2:2), JA4 (3:1), JA5 (4:0), with two controls of JA6 (beef 100%), and JA7 (commercial chicken burger). Sensory analysis was carried out by performing consumer hedonic test (n=100) and descriptive sensory profiles (n = 15) of the prebiotic burgers and the controls. The results of hierarchical cluster analysis (HCA) from hedonic test and Principal Component Analysis (PCA) from descriptive sensory profiles were then combined to develop a preference mapping. From the map, it revealed that the best consumer acceptance for the developed prebiotic burger was JA2 (oyster mushroom 1:3 chicken), rank number 3 after controls JA6 and JA7, with the level of consumer preference of 57%, that have characteristic of sufficient garlic flavor, garlic taste, barbeque flavor, barbeque taste, and chicken taste of the product.

Key Words: Prebiotic Burger, Oyster Mushroom, Chicken, Sensory Analysis, Consumer Preference Mapping

**Antioxidant Characteristics of Cocoa Skin Liquid Smoke (*Theobroma
Cacao, L*) on Different Variations in Pyrolysis Temperature and Water
Content**

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ABSTRACT

Cocoa skin waste has been wasted, it needs to be used as liquid smoke. Liquid smoke is a natural food preservative. One of the advantages of liquid smoke contains antioxidant compounds. This study aims to: determine the activity of antioxidant liquid smoke of cocoa skin on a combination of pyrolysis temperatures with different moisture content. This research is a experimental research using quantitative descriptive method in order to obtain an analysis of the antioxidant activity of liquid smoke of cocoa skin. The results showed that cocoa peel liquid smoke had strong antioxidant activity because IC₅₀ values were obtained below 50 ppm

Key Words: Antioxidants, Cocoa Peel Liquid Smoke, Pyrolysis Temperature, Water Content

Comparative Study; Genome DNA Extraction Quality of Fresh Milk and Freeze-Thawing Milk

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ABSTRACT

Milk is the highly nutritious nutrient secreted by mammary gland. Highly nutrient values on milk lead to vulnerable food to spoilage and become good media for microorganism to grow and develop. At certain conditions, milk has abundant microorganisms from contaminator especially milk who has mastitis infection diseases. Diversity study is needed to explore mastitis-causing bacteria infected on dairy udder, in order to medical treatment to curing and preventing future infections. By conducting diversity study at DNA level with 16S rRNA metagenomic analyzing approachmen will be one step ahead to observe the variety of bacteria, especially on un-culture bacteria. This research was preliminary to comparing genome DNA quality of fresh-milk and freeze-thawing milk that become sample of metagenomic 16SrRNA studies which usually taken from far distance area. The method used on this research is isolated dairy genome by using Purelink Genome Extraction from INVITROGEN[®]. The milk sample was taken from around West-Sumatera and brought to Cibinong, West-Java. To reconfirm genome extract was succeed, PCR 16S rRNA was conducted to get quantitative data. The result showed raw fresh milk has highest concentration of genome DNA at position 13 – 30 µg/ml. On the other hand, freeze-thawing milk genome DNA showed lower (2 - 7 µg/ml). Confirmation test has shown affirmative data that proofed no inhibitor on next step. However, freeze-thawing milk genome DNA cannot use for metagenomic diversity study cause of limitation information. This research suggested to prevent thawing process in order to bacteria biodiversity study in the future, especially on distribution, transportation and retention from one to others places.

Key Words: Comparative Study, Genome DNA, Dairy Milk, Freeze-thawing Milk, Genome DNA Stability

The Presence of *Escherichia coli* O157: H7, Protein, Water and pH in Beef that was Marketed in Padang City

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ABSTRACT

This research aims to get data and information regarding the quality of the beef sold in traditional markets Padang City in terms of the existence of contamination *Escherichia coli* O157: H7. The levels of protein, water and value pH. Material research was beef, part of the hamstrings or gandik (*Silver side*) from traditional market Padang City as many as 3.400 grams. Research using the method *purposive sampling* in the sampling is done randomly and in laboratory analysis against the variables measured. Data analysis is done with test *t* and test the Chi-Square. Variable measured is the total colony bacteria *Escherichia coli* O157: H7, the level of protein, water content, and the value pH. The results showed that the beef was over 8 hours on the traditional market Padang City has the level of bacterial contamination *Escherichia coli* O157: H7 the range between $9.9 - 109.6 \times 10^5$ CFU/gram, protein 17.55 – 22.60%, water content of 75.10 – 78.68% and the value of pH 5.68 – 5.93.

Key Words: Silver Side, *Escherichia coli* O157: H7, Protein, Water, pH

Application Appropriate Technology in Home Industry “Kerupuk Jangek” in District Agam, Province West Sumatra

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ABSTRACT

Kerupuk Jangek is product the flagship area District Agam. Generally found in each restaurant Padang in anywhere. In of processing, raw materials is sheet skin from cows and buffalo. It is boiled, cut into pieces and dried for next done some the level of frying pan. In process cutting, the craftsman use encryption knife the on pedestal by Board with relying on the strength of the hand and the size of the not same large. For It's with technology, created Tool Cutter the can cut in uniform with use plat steel as eye knife with the size of the 1.5 x 1.5 cm and capable of cut as wide as 60 cm in time 5-7 minutes. Drying out during, this use drying traditional use the sun with time 5-7 days depending on condition of the weather. With introduction tool dryer (solar tunnel dryer) can shorten time drying be 3-4 days and products the generated more hygienic.

Key Words: Tool Cutter, Solar Tunnel Dryer, Kerupuk Jangek, Hygienic

Extraction Efficiency and Molecular Properties of Gelatin From Skin of Golden Carp (*Probarbus Jullieni*) as Affected By Acid Pretreatment and Prior Ultrasonication

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ABSTRACT

Conventional method of gelatin extraction is time consuming and renders low extraction yield. Since the inter and intra molecular cross-linkages of tropocollagen are stable to thermal and acid treatments, a significant amount of insoluble matter is still retained. In recent years, high-intensity ultrasound (20 kHz) has been widely used to accelerate the mass transfer in a liquid system mainly due to the cavitation effect. Additionally, ultrasound generates agitation, turbulence and inter particle collision, which can enhance the extraction process. Thus, the present work aimed to improve the extraction efficiency of gelatin from the skin of golden carp with the aid of ultrasound under optimized conditions. Additionally, the effect of different acid pretreatment and ultrasound on molecular and physicochemical properties of resulting gelatins were studied.

Golden carp skin was pretreated using 1) acetic acid (0.05 M) or 2) sulfuric acid (0.02 M) followed by acetic acid (0.05 M). The third portion of skin (without acid pretreatment) was used as a negative control. The samples were treated subsequently with and without prior-ultrasonication at the amplitude of 80% for 30 min at 25 ± 2 °C in a pulse mode (5 s acting and 5 s resting time). After pretreatment, samples were extracted at 55 °C for 3 and 6 h, followed by filtration and drying. The gelatin prepared under different extraction conditions were determined for yield and gel strength. The gelatin rendering highest yield and gel strength were characterized for protein patterns, amino acid compositions, fourier transform infrared (FTIR) spectra, microstructure and gelling and melting temperature.

Gelatins pretreated using different acids (acetic acid or sulfuric acid + acetic acid), with and without prior-ultrasonication were characterized. Extraction efficiency and gelatin properties differed with varying acid pretreatments. Prior-ultrasonication (amplitude 80%) increased the yield of gelatins from acetic acid and sulfuric acid + acetic acid pretreated skins by 110.9% and 174.8%, respectively, compared with the corresponding controls (without prior-ultrasonication), when extracted for 6 h. All the gelatins contained α - and β -chain as the major components and classified as were type I. Gelatins extracted with prior-ultrasonication exhibited slightly higher content of imino acids and showed higher gel strength, regardless of acid pretreatments. Moreover, gelatin extracted using prior-ultrasonication possessed higher gelling and melting temperatures than those produced by conventional method by 9.1–12.0 and 8.2–12.2%, respectively. Based on FTIR spectra, the former gelatins had the higher cross-links stabilized by hydrogen bond than the latter. The microstructure of gelatin gels revealed that the gelatins extracted with acid pretreatment in combination with prior-ultrasonication had higher number of interjunction zones

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with finer networks. Overall, pretreatment using acetic/sulfuric acid in combination with prior-ultrasonication effectively improved the extraction efficiency and gelling properties of gelatin from golden carp skin.

Key Words: Golden Carp Skin, Gelatin, Prior-Ultrasonication, Extraction Yield, Physiochemical Properties

Impacts of Desugarization and Drying Methods on Gelling Properties of Duck Albumen Powder

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ABSTRACT

Duck albumen powder can be used as protein additive or ingredient for food products, especially to improve gel properties of surimi or fish products. Duck egg powder encounters discoloration mediated by Maillard reaction in the presence of glucose during spray drying. To conquer this problem, prior desugarization is a crucial step before dehydration to obtain white albumen powder. Thus, the objective of this study was to investigate the impact of prior desugarization and spray-drying inlet temperatures on color and properties of gels from duck albumen powders. For preparation of desugarized albumen, albumen solution (300 mL) was mixed with glucose oxidase (31.24 units/mL) and catalase (781 units/mL). The mixture was incubated at 30 °C for 6.55 h at pH 7.6 in the presence of 0.1 mL of 30% H₂O₂, which was the optimal condition obtained by a response surface methodology (RSM). Then, desugarized and non-desugarized fresh duck albumens were subjected to spray-drying with various inlet temperatures (140, 160, and 180 °C) and freeze-drying. All dried albumen samples obtained were subjected to analyses. To determine gelling temperature of albumen solution, rheological behavior of the sol-gel transition of duck albumen solutions (10% solid content, w/v) were determined. The elastic modulus G' and the loss (viscous) modulus G'' were recorded. Albumen gels were prepared and subjected to color and microstructure, and texture profile analysis. Gelling temperatures increased as spray-drying inlet temperatures (140-180 °C) were increased ($P < 0.05$). ΔE^* -, a^* - and b^* - values of gel increased but L^* - value and whiteness decreased when higher spray-drying inlet temperatures were used ($P < 0.05$). However, whiteness and lightness of albumen gel were drastically increased after desugarization ($P < 0.05$). Texture profile analysis showed that hardness, springiness, gumminess and chewiness of gel decreased with increasing inlet temperatures. Moreover, gel of freeze-dried desugarized albumen had higher hardness, springiness, gumminess and chewiness than that of spray-dried non-desugarized counterpart ($P < 0.05$). Albumen gel prepared from desugarized albumen powder showed the compact network with more connectivity and smaller voids than that from non-desugarized one as visualized by scanning electron microscopy, regardless of drying conditions. Prior desugarization lowered browning and increased gelling properties of duck albumen powder. Higher spray drying inlet temperature generally exhibited the adverse effect on properties of resulting albumen powder. Both desugarization and drying conditions had the profound influence on characteristics and textural property of duck egg albumen.

Key Words: Duck Albumen, Desugarization, Freeze-Drying, Spray-Drying, Gelling Property

Antimicrobial Properties of Ethanolic Coconut Husk Extract and Its Application for Extending the Shelf-Life of Seabass Slices

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ABSTRACT

Coconut husks are still reported as underutilized resources causing environmental pollution. Coconut husk extract was reported to have antimicrobial properties against a wide range of bacteria. It contained tannic acid, 4-ferulic acid, hydroxybenzoic acid, including lignin phenols such as syringic acid, p-coumaric acid and vanillic acid are phenolic compounds. In general, solvent extraction is most commonly used method for isolating phenolic compounds from plant materials. However, type and concentration of solvents, extraction techniques and plant material are major factors affecting the extraction efficacy and activities of phenolic compounds. The present study aimed to investigate the effect of ethanol at different concentrations as extracting media on antimicrobial properties of coconut husk extract against some gram-positive and gram-negative microorganisms and to study the impact of the selected coconut husk extract on shelf-life extension of refrigerated sea bass slices.

The extracts from coconut husk powder (CHP) were prepared by adding CHP (10 g) with ethanol (300 ml) at different concentrations (20, 40, 60, 80 and 100%). The mixtures were continuously stirred at room temperature (25–28 °C) for 3 h. Thereafter, the mixtures were centrifuged at 6,000 g for 35 min and filtered. Ethanol in the filtrate was evaporated at 40 °C. Ethanolic coconut husk extracts were subsequently dried using a freeze dryer. The dried extracts prepared using 20, 40, 60, 80 and 100% ethanol were referred to as ECHE20, ECHE40, ECHE60, ECHE80 and ECHE100, respectively. All the extract powders were determined for total phenolic content. Minimum inhibitory concentration (MIC), minimum bactericidal concentration (MBC) and time to kill assay of ECHE against some gram-positive and gram-negative microorganisms were examined.

The extract with the most promising antimicrobial activities was selected for treatment for sea bass slices at a level 200 and 400 ppm. Untreated samples served as control. All the samples were stored at 4 °C. Sampling was undertaken at day 0, 3, 6, 9 and 12 of storage for microbiology, chemical, and sensory analyses.

Total phenolic content of ECHE extracted using 20-100 % ethanol ranged from 284.91 to 372.43 mg tannin equivalent / g powder. ECHE60 and ECHE80 had the higher total phenolic content than others ($p < 0.05$). But there was no difference between both extract ($p > 0.05$). Minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of ECHE against *Pseudomonas aeruginosa*, *Escherichia coli*, *Vibrio parahaemolyticus*, *Listeria monocytogenes* and *Staphylococcus aureus* varied, depending on ethanol concentration used. ECHE60 had similar MIC and MBC to ECHE80 and ECHE100. ECHE60 exhibited bactericidal effect on all test microorganisms in an exposure time dependent manner. The sea bass slices treated with ECHE60 at 200 and 400 ppm had the lower increase in total viable bacteria, psychrophilic bacteria, hydrogen sulphide producing bacteria, Enterobacteriaceae and *Pseudomonas* counts than the control. The pH, peroxide value, TVB content and TBARS of ECHE60 treated slices were lower

than the control ($p < 0.05$) during the storage. Based on microbial results, the shelf-life of sea bass treated with ECHE60 at 200 and 400 ppm was extended to 6 and 9 days, respectively, whereas the control had shelf-life of 3 days. ECHE60 at 400 ppm showed unacceptable discoloration in the cooked slices. Therefore, ECHE60 at 200 ppm was recommended as a natural food preservative in extending shelf life of sea bass slices without negative effect.

Key Words: Coconut Husk, Ethanolic Concentration, Antimicrobial Properties, Sea Bass, Shelf Life

Physicochemical Properties of Quail Bone Gelatin Extract with Hydrochloric Acid and Its Application in Minced Fish

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ABSTRACT

The objective of the present study is to determine the physicochemical properties of quail bone gelatin (QBG) extracted with hydrochloric acid and its application in minced fish. Acid pre-treatment was used in the extraction of QBG and was compared with commercial bovine gelatin (CBG) and commercial fish gelatin (CFG). Various properties such as yield, chemical composition (moisture, ash and protein), pH, bloom strength and melting temperature were evaluated. The chemical composition of resulted QBG was significantly difference with CBG and CFG. Bloom strength is the important parameter in determine quality of gelatin. Bloom strength of QBG was 165.36 g which comparable with CFG (91.67 g) and CBG (136.18 g). Addition of QBG into minced fish result a better quality of fish gel compared with the addition of CFG but have lower quality when compared with CBG. Addition of QBG able to improve the folding test, gel strength and hardness of fish gel. Thus this QBG can be alternative sources for mammalian and marine gelatin in wide application of various fields.

Key Words: Physicochemical, Quail Bone Gelatin Extract, Hydrochloric Acid, Minced Fish

Identification of Meat Authenticity in Processed Food Products By PCR-RFLP of Mitochondrial *Cytochrome B* Gene

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ABSTRACT

Food authenticity are important issues in labeling of processed foods because consumers nowadays are more concern in selecting a suitable and safe food for their health. Moreover, Halal authentication also becomes the major concern among Muslim consumers. Therefore, the present study aims to ascertain the meat species in processed food products by employing Polymerase Chain Reaction-Restriction Fragment Length Polymorphism (PCR-RFLP) of the mitochondrial *cytochrome b* (*cyt b*) gene. DNA was extracted from raw and processed beef and chicken products using NucleoSpin® Food Kit. Amplification of *cyt b* gene was performed using forward primers (*cyt b*1): 5'-CCA TCC AAC ATC TCA GCA TGA TGA AA-3', and reverse primer (*cyt b*2), '5-GCC CCT CAG AAT GAT ATT TGT CCT CA-3'. Then, the PCR products from *cyt b* gene with 359 bp were resolved by three restriction enzymes; *AluI*, *RsaI* and *BsaI* for further identification of the meat species. The results showed that the PCR-RFLP technique proved to be reliable for identification of meat authenticity in processed food products. In addition, it also revealed the ability of mitochondrial *cyt b* gene as the target region. Thus, PCR-RFLP method was effectively identify the authenticity of the studied meat samples.

Key Words: Authentication, Processed foods, *cytochrome b* gene, restriction enzymes, PCR-RFLP analysis

Geometrical Structure of Water Molecule: an Invention into Creative Artworks

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ABSTRACT

A geometrical structure was discovered in the molecule of water, that had been established from the previous and current studies. The geometric shapes were formed from the points and lines, and then created the shapes either triangle, square, and circle. The molecule water that study for this project was determined in how the hidden crystal of hexagon shapes was found. Mysteriously, the real character of molecule water not able to view and observe through our eyes. The sophisticated equipment like a microscope was really helpful in order to view the detail of molecular cell, which all the characters of the specimen was unique and different. Therefore, the objective of this study is to analyse the geometric hexagon shape as to select the character of molecule water and then responses the inspiration for creative artworks. For this study, the investigation related images about detail molecule of water character was determined. Then, the relevant and appropriate style was chosen and developed into ceramic artworks.

Key Words: Geometrical Structure, Water Molecule, Creative Artworks

Physicochemical Properties of Quail Bone Gelatin Extract with Citric Acid (C₆H₈O₇) and Its Application in Minced Fish

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ABSTRACT

Quail bone was used as a source of gelatin by using acidic pretreatment and determined the physicochemical properties and effect of gelatin addition in minced fish. The yield for quail bone gelatin extracted with 0.1 M citric acid solution (QBGc.a) is 1.71%. The bloom strength and melting temperature of each gelatin was measured using Texture Profile Analyzer (TPA) and Differential Scanning Calorimetric (DSC). The moisture and ash content of commercial bovine gelatin (CBG) and commercial fish gelatin (CFG) have lower value compared to QBGc.a. The protein content of QBGc.a is lower than CBG and CFG which is 67.68±1.23; 87.92±0.82 and 89.86±1.81 respectively. Protein was known to be responsible for bloom strength of gelatin and the QBGc.a presented the highest bloom strength (149.08g) compared to CBG (136.28g) and CFG (91.67g). The pH and melting temperature values has range between 4.84 to 5.46 and 29.34 to 38.69°C. Then, QBGc.a. was added into minced fish to study the effect on the fish gels such as cooking yield, expressible moisture, folding test, gel strength and hardness. About 2% of each gelatin was added into minced fish and cooking yields of the fish gels was improves for all three sample. The addition of QBGc.a. has improves the folding test from 1.00 to 2.00, reduced expressible moisture, increase gel strength and hardness of the fish gels. The result of QBGc.a. added into minced fish was compared with control, CBG and CFG. Overall, the physicochemical properties of QBGc.a. have similar quality to CBG and it also able to improve the quality of fish gels. The result have been proves that QBGc.a. have a good quality gelatin therefore it can be used as an alternatives for gelatin production in the future.

Key Words: Physicochemical, Quail Bone Gelatin Extract, Citric Acid, Minced Fish