

PJBS_Soaking Salted Egg

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Abstract: Gambier liquid waste containing tannin compounds were quite high and serves as an antimicrobial

agent that will tanning salted eggs so that closed the pores of the egg shell and egg to be durable. This study

aims to see the effect of soaking salted eggs in gambier liquid waste remaining effective in improving the quality

of salted eggs. This study used a randomized block design with three replicates and ten treatments. The treatment were, A: control (no soaking), B: Immersion 49 h with a gambier liquid waste : distilled water (1:2),

C:25h4:2), D:1h(:2), E:49h@d:1) F 25h@d:1), G:1h@d:1) H: 49h 4:0), 25h(41:0), J:1h(1:0). The variables used were water content, bacterial colony forming and shelf life. Results of this study showed a significant ($p < 0.05$) on water content, bacterial colony forming and shelf life. The best treatment inhibiting bacterial growth

for longer was salted eggs soaking in gambier liquid waste : water (1:0) 1 hand 25 h with a water content of

62.67Y0, bacterial colony forming 0.99×10^7 CFU g⁻¹ and shelf life 63 days.

Key words: Gambier liquid waste, salted eggs, tannin, bacterial colony forming and shelf life

INTRODUCTION of duck eggs was completely gone and the colour of the egg whites do not change, remain white. This study aims

Eggs including livestock food was perfect because to see the effect of soaking salted eggs in gambier liquid they contain quality nutrients, rich in protein, fat, waste remaining effective in improving the quality of minerals, vitamins and other substances needed by the salted eggs.

body. Egg protein was a high quality protein and is easily

digested so it is best eaten by children in infancy, MATERIALS AND METHODS

pregnant and nursing mothers, the elderly and people

who were sick or in early stages of recovery. Materials and equipment: The main materials used were

Duck eggs can be made salted eggs. Preservation the duck eggs aged less than 24 h of 300 duck eggs from

natural used gambier liquid waste can also extend the ducks farms anduring, Padang City. Gambier liquid waste

shelf life of salted eggs. This was because gambier liquid — derived from Harau subdistrict, District of Cities Fifty, as

waste contains tannin that function tanning eggs leather — much as 37, 125 mL. Then powdered brick as much as

so the egg shell pores closed. As a result, the shell 1800 g, ash as much as 7200 g and salt as much as 3600 g

becomes impermeable to water and gases. So that they were purchased at Raya Market, Padang City.

Other

discharge of water and gas from the eggs could be materials are as many as 35 325 mL of water (11 700

mL for

prevented as small as possible. making salted eggs and 23 625 mL of dilution gambier

The boiling process gambier leaves and twigs as liquid waste). While supporting material for analysis was 30-40 kg require as much as 24 L of water. Gambier liquid — distilled water, filter paper, PCA powder, peptone water.

waste produced as much as 6 L. If converted gambier The equipment used was analytic scales, spoons production years 1993 - 1995 ranged between 1, 020, 900-2, stainless steel, electric oven, desiccator, porcelain bowls,

125, 800 L, the amount of tannin in the production of ' mortar and pestle, clamp plate, electric stove, Erlenmeyer

gambier liquid waste ranged from 204, 180-425, 160 kg, will 250, 100 mL measuring cup, oven, hot plate, spoon sterile

be wasted if not used (Agricultural Information Center of — incubator, stopwatch, Quebec Colony Counter, measuring

West Sumatra, 1996). pipettes, petri dish, hockey sticks, micropipette and

Soaking eggs in gambier liquid waste for 1 his the autoclave.

best in maintaining the quality of fresh eggs for a month

(Novia et al., 2010). The results of the pre-study soaked " Draft research: This study was conducted with the

salted eggs in gambier liquid waste for 4 days, have not experimental method with randomized block design

been damaged after being stored 18 days while the stench — with 10 treatments and 3 groups as replication. As the

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treatment was long soaking salted eggs with different — » Salted eggs that have been cleared to provide concentrations in gambier liquid waste were, A: control treatment randomization done long soaking salted (no soaking), B: Immersion 49 h with a gambier liquid eggs with different concentrations in gambier liquid waste : distilled water (1:2), C: 25h(1:2), D: 1h (1:2), E: 49 waste were, A: control (no soaking), B:

Immersion

hd), F 25h@d-1), G1 h(@d:1) H: 49h (1:0), I: 25h (4:0), 49 h with a gambier liquid waste : distilled water (1:2),

J:1h(4:0). C: 25 h (1:2), D:1h(1:2), E: 49h(4:1), F: 25h@:1),

The linear model of the design were: G:1h(1), H: 49h 4:0), I: 25h(1:0),J:1h(1:0)

» Eggs that have been soaked then drained and boiled

Yy 5 UtortB-H for 15 mm in water that has been boiling, then

removed and drained. Then stored for 7 days and be

Where: checked for shelf life to 7 days intervals until damage

Y, 5 Observations from experimental units treated to » Analysis for water content, protein content using the

1, toj white and yolk samples that have been homogenized

U - General median

@. — Effectof treatment toi This research was conducted at the Animal Health

PB, ' - The effect group toj Laboratory of Animal Husbandry Faculty andalas

yyj £ Influence of the rest of the experimental urits University at Padang on June 7, 2010 until the date of treated to1i and j group August 18, 2010.

1 - Treatment(A,B, CandD)

J5 Manygroups (1, 2, 3, 4 and 5) Top of form

5 The observations: The observations made on salted eggs

If significantly different between treatments (p 0.05) include: moisture content oven method, bacterial colony

or highly significant different (px0.01) then further tested — forming with Standard Plate Count method and shelf life

by Duncan's Multiple Range Test (DMRT). by using sensory factors could use sensory parameters (colour, flavour, aroma and texture). Analysis of shelf life

Work procedures: The procedure of making salted eggs estimation according deadline deterioration could be

as follows: tolerated at the onset of egg white mucus and foul aroma.

Observations were made at intervals shelf life of 7 days

» Fresh duck eggs agedupto48 h with a weight of until the rotten salted egg.

65-70 g, total 100, cleaned of dirt

» Salting medium consisting of: water, powdered red RESULTS AND DISCUSSION

brick, ash and salt scrub. All the mgredients are

mixed, then stir until blended where the ratio of brick, Water content: The results soaking salted eggs in ash and salt scrub 3: 2: 1 means the brick was used "" gambier ligud waste were made after 7 days of

1200, 800 g of ash rubbing, 400 g of salt and 1950 mL, storage/control was broken, found the average water

water content ranged from 62.67-70.02465. Average moisture

» After that covered with duck eggs and brooded "— content of salted egg intlus study can be seen in Table

1.

marinating media for 7 days ² Based on Table 1 could be seen the highest average

» Eggs that had stored 7 days, cover opened, washed — water content contained on treatment A (control) with the

thoroughly with water average 70.079 while the lowest water content contained

Table 1: Average water content, bacterial colony forming and shelf life salted eggs soaking in gambier liquid waste ""o"o"o————

Treatment of long soaking, Bacterial colony

gambier liquid waste: distilled water Water content (0) foming 1x10) (CFU g") Shelf life (days)

A (control) 70.07 47.80" 7.003

B (49h, 1:2) 66.020 1.51 42.0

C(2Sh, 1:2) 67.220 1.09ve 53.67?

D (1h, 1:2) 68.632 1.50" 53.67?

E(49h, 1:1) 67.610 1.13 46.67

F(2S5h, 1:1) 65.720 1.03 46.67

G dh, 1:1) 66.000 1.27 46.67

H (49h, 1:0) 64.96 1.03 56.00?

I (25h, 1:0) 62.95" 0.88' 63.008

Jdh, 1: ⁸ 62.67 0.99e 63.00?

Mean with different superscripts indicate significantly different (p 0.05)

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in the D treatment (1 h soaking gambier liquid waste: In treatment A (control) had the highest water distilled water was 1:0) with a mean of 62.676. Water — content. In this treatment the egg is broken because it has

content affected significantly ($p < 0.05$) by along soaking — undergone a change with the onset of mucus and smell.

and dilution gambier liquid waste. The shorter immersion — Data 0 day treatment A (control) showed levels of water

and the lower the dilution will reduce levels of water and as much as 65.0599 after 7 days of treatment A

content. (control) shows the average moisture content of as much

Duncan's range test results showed that the as 70.076. Increased the water content of treatment A

treatment A (control) did not affect significantly ($p > 0.05$) (control) Was s9 due 2 the Infuenoe metabolism »y

on treatment B, C, D, E, F and G and the real effecto — MISI OOIgAMSINS GUNNG Storage O YS.

ACCOFAING LO

treatment H, I and J. The lowest water content contained Buckle et al. (2009), one of the factors that influence

in the treatment J (1 h immersion concentration gambier bacterial growth was Water. Added Fardiaz (1992) that the

liquid waste and distilled water 1:0). Durig the tanning metabolism O1 Ine bacteria ena (he nutrien In ine Food

process by submersion occurs tanmins derived from BY TOL 8 ? |

Oo | 0. breakdown of organic substances will result in the final

gambier liquid waste with eggshell membrane lming. The |

product in the form of water, causing the water content of

process of tanning causes attraction of free water

bet he Fi F the cell. so that th at tent food was increasing.

SIWCEN UNS TIDEIS O | Se » 30 AL ne MOS! ure Con mn Wulandari (2004) resulted that salted water levels are

was reduced. 1 h 1mmersion was effective tanning nfl d sionificantly bv the i thod and

5 ding 8.3394 (data pre-research in the influenced significantly by the immersion method an

membrane 688 slading &. p | length of storage and the water evaporating and the

Laboratory of Agricultural Technology, Agriculture amount was determined by the diameter of the pores of

Faculty andalas Unversity) wherein the low water content the egg shell. Added by Novia and Andalusia (2011) in

1 thus treatment. This 1s m line with the OplON| of the process of soaking salted onion skin extract for Ibrahim et al. (2005) on the diffusion process of tanning 1-7 days generate 67.51-67.09Y9 moisture content was

substances through the skim from the surface mto the '— measured after control was broken. According to Lai et al.

fiber woven structure, s0 that the free water between the (2010) water content white and yolk eggs were decline of

fibers of the skim was out. Based on data from 0 days, A 8 and 746 to salted eggs for 3 weeks. Research

the water content of 62.179 and after treatment A faulty (Kaewmanee et al., 2011) The longer the

marinating

control shows the average water content of as much as '— process, an increase in water content and a

decrease for

62.67Y0. salted eggs cooked in egg yolk and white.

In fact no different moisture treatment A with salted

eggs with all treatments except treatment A (control) and '— Bacterial colony forming: The results soaking salted

D (1 h immersion concentration gambier liquid waste and eggs in gambier liquid waste were made after 7 days of

distilled water 1:2) was caused by the egg shell pores are storage at the control corrupt or average bacterial colony

covered with keratin protein has tanned by the tannins so — forming obtained ranged from 8.80×10^4 - 47.80×10^6 CFU/g".

the egg pores closed. Closed pores eggs thus inhibiting Bacterial colony forming significantly influenced by long

the circulation water, gas and microorganisms into the '— Soaking and gambier liquid waste and dilution water, the

salted egg, water content obtained different unreal. In handling of immersion and in basic concentrated treatment D by 1 h immersion concentration gambier liquid — SINDO HGU waste Would reduce bacterial colony

waste and distilled water was 1:2 lead to penetration of forming. |||

0. Bacterial colony forming lowest was in treatment I

tanning leather tannin immature eggs. According to || oo. 0.

| (25 h soaking in gambier liquid waste and distilled

Ibrahim et al. (2005), factors affecting the concentration of |

water 1: 0). Data 0 days treatment G showed bacterial

substances such as tannin and tannin substance form 3 4 of da

icle si lecules. In treatment D tannin levels onl colony forming 1.04×10^6 CFU/g after / days was

partic & $5126 \text{ MO} \cdot | \cdot 0.88 \times 10^9 \text{ CFU/g}$.I was the optimal treatment as indicated

a fluid of the treatment J (tannin content of 8.33Y4), so no by th

: : y the bacterial colony forming least. Based on the

treatment D black A5 well as the particle size becomes pre-research content of tannins in gambier liquid waste

smaller, causing tannins holding capacity was reduced. was as much as 8.3396. Tannin serves as a tanner eggs

Added by Ibrahim et al. (2005) particle size smaller — which could inhibit the activity of microorganisms from

tanning substances cause holding capacity was reduced "" the outside. According Zulaekah and Widyaningsih

but the power of penetration will increase. So time was (2005) contains tannins phenol compounds that are | h tanning causes tanning rudimentary compared with — antibacterial and functions cover the pores of the egg

other treatments remainder soaked in gambier liquid — shell that inhibits the entry of microorganisms into the

waste. egg.

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Unlike no real treatment I (25 h soaking in gambier Wlule the results of the study Novia et al. (2011) lgud waste with water and distilled water 1:0) with E, F, making oven salted eggs way to 70°C temperature, 6 h,

G, Hand J the bacterial colony forming caused by water — broke down after 25 days of storage. Added by immersion treatment was done gambier ligud waste — Novia et al. (2012) smoke salted egg was still in good

gambier ligud waste with time not too long with a hgh — condition after 37 days of storage, characterized by the

tanmmin content. This maintains durability salted eggs absence of changes in protein and fat.

produced, bringing the bacterial colony forming generated

in the range 0.49×10^7 CFUg⁻¹ until the 1.55×10^7 CFU g⁻¹, CONCLUSION

where the range was still safe to eat.

Data O day treatment A (control) showed bacterial With the effects of long soaking salted eggs in colony forming 1.12×10^7 CFUg⁻¹ and after treatment of a — gambier ligud waste showed significant effect on the

broken control showed bacterial colony forming moisture content, bacterial colony forming and shelf life.

47.80×10^7 CFUg⁻¹ in which the pores of the egg shell was The best treatment was contained in 1 h soaking in

not covered by the tanruns resulting in the evaporation of — gambier ligud waste: distilled water (1:0), with a water, gas and air, facilitate the entry of bacteria into the water content of 62.67%, bacterial colony forming egg and lead to mcreased activity of microorganisms 0.99×10^7 CFUg⁻¹ and a shelf life of 63 days.

compared with treatment using a solution of gambier

ligud waste. The results of Novia et al. (2011) that salted ACKNOWLEDGMENT

eggs soaking in onion skin solution that the longer it

would increase the bacterial colony forming produced. The research was financed by the DIPA UNAND In

Immersion 1-7 days of data showed bacterial colony accordance with the Letter Agreement

Implementation

forming between 0.49×10^7 - 1.55×10^7 CFU g⁻¹ were Research, No. 007/H.16/PL/DM-DIPAI/2010 dated

calculated after control was broken. March 18, 2010. The author would like to thank the Rector

Andalas Umversity, Chairman of the Institute for

Shelf life: The results soaking salted egg in gambier — Research, Dean of the Faculty of Animal Husbandry.

laguid waste were made after 7 days of storage/control

foul, obtained averaging 7-63 days. Salted egg shelf life REFERENCES

significantly influenced by long soaking and dilutions

were performed. The shorter and more intense immersion — Agricultural Information Center of West Sumatra,

gambier ligud waste would extend the salted eggs shelf 1996. Fertilization and gambier processing. BIP life. Sumatra.

The test results further showed that treatment J (1 h Buckle, K.A., R.A. Edwards, G.H. Fleet and M.

Wootton,

soaking in gambier liquid waste and distilled water 1: 2) do 2009. Food Science. 2nd Edn., Unwversity of not differ sigruficantly with treatment I (25 h immersion in Indonesia, Jakarta.

gambier ligud waste and distilled water 1: 0). This shows Fardiaz, S., 1992. Food Microbiology. Scholastic Press,

that the treatment I and J by using gambier liquid waste Jakarta⁴

without more effective for curing salted eggs. This was Ibrahim, L., I. Juliyarsi and S. Melia, 2005. Science and

because the tannins contained in gambier liquid waste⁴ technology leather processing. Faculty of Animal able to tan the skim pores eggs well and maintam the²usbandry Andalas University, Padang.

guality salted eggs. In accordance with the opinion — Kaewmanee, T., S. Benjakul and W. Visessanguan, 2011.

Zulaekah and Widyaningsih (2005) that comp²unds Effect of salting processes and time on the chemical containing tannns are phenol compounds as compositi², textural properties and microstructure of anti-bacterial that can mlu⁶ the growth of bacteria that cooked duck egg. J. Food Sc1., 76: S139-5147. food products be durable. Lai, K.M., W.H. Chung, C.L. Jao and K.C. Hsu, 2010. Oil

Based on Table 1 can be seen the highest average¹⁰ exudation and histological structures of duck egg shelf life were on treatment J (1 h immersion in gambier yoks⁴uring brining. Poultry Sci., 9: 738-744. ligud waste and distilled water 1:0) and 1 (25 himmersion — Novia, D., I. Juliyarsi and A.A. Putra, 2010. Preserving

in gambier ligud waste and distilled water 1:0) with eggs by gambier liquid waste at Agung Abadi Farms, averaging 63.00 days whule the lowest shelf contained on Harau subdistrict, District of cities fifty. Warta treatment A (control) with the average 7.00. Andalas Devotion, 16: 109-121.

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