ISSN 1307-8798

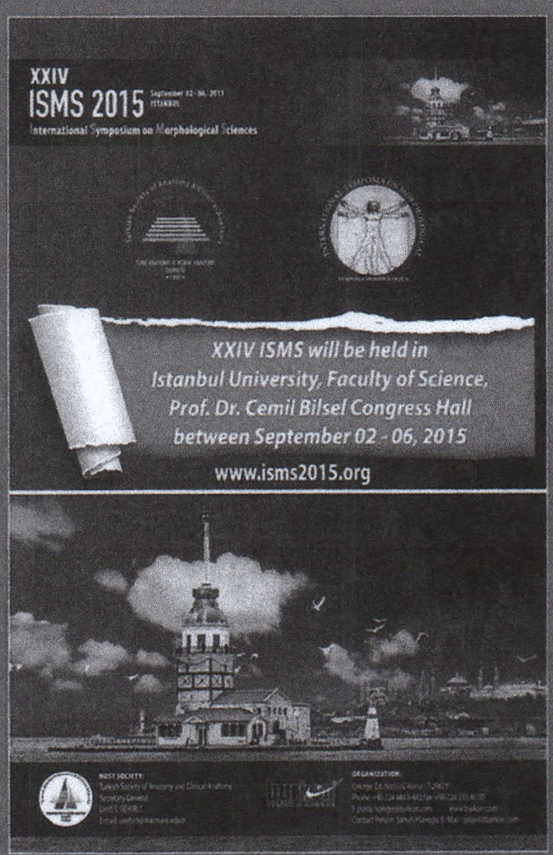
Official Publication of the Turkish Society of Anatomy and Clinical Anatomy

www.anatomy.org.tr

anatomy

An International Journal of Experimental and Clinical Anatomy

Volume 9
Supplement 2
September 2015



Special Issue includes abstracts for the XXIV International Symposium on Morphological Sciences 2nd–6th September, 2015, Istanbul, Turkey

deomed

anatomy
An International Journal of Experimental and Clinical Anatomy

XXIV International Symposium on Morphological Sciences

2nd–6th September, 2015, Istanbul, Turkey

Honorary Council
Hakan Hamdi Çelik
Erdoğan Şendemir

Secretary General
Ümit S. Şehirli

International Coordinators
Guido Macchiarelli
Diogo Pais
Gordana Teofilovski-Parapid
Yasuo Uchiyama

National and Public Relations Coordinator
Mehmet Ali Malas

Finance Coordinator & Treasurer
Cem Cemil Denk

Scientific Coordinator
Muzaffer Şeker

Organizers of the Scientific Program
Salih Murat Akkın
Serap Arbak
Özhan Eyigör
A. Kağan Karabulut
Levent Sarıkcıoğlu
Mustafa F. Sargon
Gülgün Şengül
Emel Ulupınar
Ahmet Usta

Social Program Coordinator
Mehmet Üzel

Organizers of the Social Program
Özgür Çakmak
Aysin Kale
Ural Verimli

11:.00 - 12:00	**Plenary Lecture** ***Chair:*** **Gülgün Şengül**
	Brain, behaviour and evolution George Paxinos (Sydney–Australia)
12:00 - 13:30	**Lunch**
13:30 - 14:30	**Plenary Lecture** ***Chair:*** **Emel Ulupınar**
	Peripheral nerve repair and regeneration Stefano Geuna (Torino–Italy)
15:00 - 15:30	**Coffee Break**
15:30 - 16:30	**Mini-Symposium** / Sponsored by CSAS Histology and Embryology ***Chair:*** **Hong-Quan Zhang**
	Role of integrin-interacting proteins in cancer progression Hong-Quan Zhang (Beijing–China)
	Oligodendroglial development: new roles for connexin mediated glial networking Lan Xiao (Chongqing–China)
	Comparison of calcium and barium microcapsules as scaffolds in the development of artificial dermal papillae Chang-Min Lin (Shantou–China)
	The easily ignored role of autophagy in early events of embryo development Xue-Song Yang (Jinan–China)
16:45 - 18:45	**ICSMS Meeting**

Hall 2

09:00 - 10:00	**Oral Presentations** ***Chairs:*** **Stojanka Arsic, Esat Adıgüzel**
	O-67 Vitamin D attenuates kidney fibrosis via reducing fibroblast expansion, inflammation and epithelial cell apoptosis Nur Arfian
	O-04 The morphology and haemodynamics of vessels in kidney with a single and aberrant renal arteries in norm and in hypertension Maia Dgebuadze
	O-17 Uric acid induces glomerulosclerosis, tubular injury and renal fibrosis through transforming growth factor, 1 elevation and fibroblast expansion Muhammad Mansyur Romi
	O-21 Surgical anatomy of the left triangular ligament and 'fibrous appendix' of the liver Petros Mirilas
	O-30 Pre- and para-proliferative features of ductular reaction following biliary obstruction Dimitri Kordzaia
	O-34 Comparative effect of apple, date and balsamic vinegar's on liver histopathology in rats under high fat diet Fahimeh Mohammadghasemi
10:00 - 10:15	**Coffee Break**
10:15 - 11:00	**Plenary Lecture** ***Chair:*** **Ahmet Usta**
	Electrochemical processing of charged molecules: pathway to engineering of complex tissue structures Ozan Akkuş (Cleveland–USA)
11:00 - 12:00	**Oral Presentations** ***Chairs:*** **Yakup Gümüşalan, Servet Çelik**
	O-16 Effect of tryptophan on testosterone, estradiol and luteinizing hormone levels and on Leydig cells in male rats Eryati Darwin

O-15

Relationship between consentration of alkaline phosphatase with bone destruction in periodontal disease patients

Kasuma N*, Darwin E**

*Department of Oral Biology, Faculty of Dentistry University of Andalas, West Sumatera, Indonesia; **Department of Histology, Faculty of Medicine University of Andalas, West Sumatera, Indonesia

Periodontitis is a chronic inflammatory process which affect connective tissues surrounding the tooth (gums, periodontal ligaments,and alveolar bone) leading to attachment loss. Periodontitis may progress to bone destruction and tooth loss if it is left untreated. Clinical characteristics of periodontal disease include bleeding and friable gums, gingival recession, deepening pockets surrounding the tooth (indicating loss of anchoring attachments), and eventual tooth loosening. Alkaline phosphatase is a hydrolase enzyme, which is synthesized and secreted by polymorphonuclear neutrophils during inflamation and by osteoblast during bone formation and also by periodontal ligament fibroblast during periodontal regeneration. Creating a local bone environment of alkalinity to help bone mineralization. Acute infection causes bone destruction mechanism. Chronic periodontal inflammation increase levels of acid and alkaline phosphataseand by all products from bacteria and the destruction of tissues that support the teeth. When the inflammation spread along the transeptal fribres, it will shows a resorption of the alveolar bone crest. Due to the severity of the periodontal inflammation and bone turnover rate will increase ALP concentration. In severe periodontitis, the increasing bone turnover intensifies bone destruction by osteoclast. The purpose of this study is to examine the relationships between consentration of alkaline phosphatase with bone destruction in periodontal patients disease. This research involved 60 people with 20 healthy samples, 20 mild gingivitis samples, and 20 mild periodontitis samples. To see a normal distribution, Kolmogorov Smirnof Test is used ($p>0.05$). Post-hoc Bonferroni test is taken to test the differences each variables. Conclussion of this research is there are significant differences in the levels of Alkaline Phosphatase on the terms.

O-16

Effect of tryptophan on testosterone, estradiol and luteinizing hormone levels and on Leydig cells in male rats

Darwin E*, Putri A**, Aryaneta Y**

*Department of Histology, Faculty of Medicine, Andalas University, Padang, West Sumatra, Indonesia; **Biomedic Programe, Faculty of Medicine, Andalas University, Padang, West Sumatra, Indonesia

Introduction: Tryptophan is an essential amino acid found in many plant and animal proteins, that can be synthesized into serotonin and be converted to melatonin. Since tryptophan is the precursor of serotonin, its dietary amount has important effects on stress, mood, memory, and male sexual behavior. Melatonin is a hormone that regulates diurnal rhythms and influences the immune, gastro intestinal and reproductive systems.

Objectives: To determine the effect of tryptophan on testosterone, estradiol, luteinizing hormone levels and the number of Leydig cells in rats.

Methods: Male Rattus norvegicus were divided into fo groups of seven rats, one served as control and three as tre ment (P) groups. The treatment groups were given14 da intraperitoneal injection of 40, 50 and 60 mg/kg BW trypt phan for groups P1, P2, and P3. Blood was collected at day to determine the level of testosterone, estradiol, and luteinizin hormone, and testis were excised and processed histopatholo ically to determine the number of Leydig cells

Results: Testosterone level of P1, P2 and P3 were no differen from control (12.95±1.55 nmol/l, 11.03±0.54 nmol/l, 13.57±1. nmol/l and 13.78±2.33 nmol/l), respectively). Estradiol level w significantly higher in P2 than control (10.17±0.85 pg/dl a 8.65±0.74 pg/dl respectively). Meanwhile, there was no diffe ence between P1 and P3 from control (9.87±1.01 pg/d 8.08±0.53 pg/dl and and 8.65±0.74 pg/dl respectively). The le of luteinizing hormone was significantly lower in P1, P2 and P than control (3.78±0.29 nmol/l, 3.32±0.35 nmol/l, 2.96±0. nmol/l and 5.60±0.30 nmol/l respectively). The number Leydig cells was significantly lower in P3, but no differen between P1 and P2 from control (17.66±0.81%, 21.00±1.09% 19.66±1.03%, and 22.50±1.22% respectively).

Conclusion: Higher dose of tryptophan in the diet led to a increase of serotonin and melatonin, which led to an effect on t level of estradiol and luteinizing hormone. However, there we no effect on testosterone and ðn the number of Leydig cells.

O-17

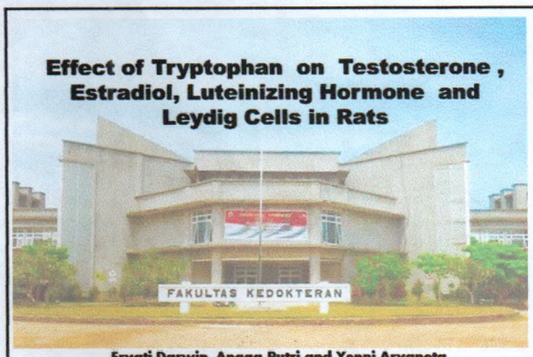
Uric acid induces glomerulosclerosis, tubular injury and renal fibrosis through transforming growth factor, 1 elevation and fibroblast expansion

Romi MM*, Arfian N*, Tranggono U**, Sari DCR*

*Department of Anatomy, Faculty of Medicine, Universitas Gadj Mada, Yogyakarta, Indonesia; ** Department of Surgery, Faculty Medicine, Universitas Gadjah Mada, Yogyakarta, Indonesia

Uric acid (UA) is an independent factor of cardiovascular disease and induces renal damage. Transforming Growth Factor β (TGFβ1) is well known as a profibrotic factor in kidney and ass ciated with fibroblast expansion. Here, we elucidate TGF modulation of hyperuricemia induced renal fibrosis in mic Hyperuricemia is induced in Swiss Background mice (3-4 mont 30-35 gram, n=21) using intraperitoneal injection of 125 mg/k of uric acid daily. NaCl injection was used in control mice. Mic were sacrificed in 7 (UA7) and 14 days (UA14) injection. Uri acid and creatinine serum is measured from retro-orbital bloo serum before renal harvesting. Paraffin section is made, deparaf finized, then stained for Periodic Acid Schiff (PAS) and Siriu Red for glomerulosclerosis, tubular injury and fibrosis quantifi cation. We extracted RNA and made cDNA, then run Revers Transcriptase PCR (RT-PCR) for nephrine, podocine, MCP- and ICAM-1. PDGFR, immunostaining was done for quantifi cation of fibroblast number. TGF,1 was measured using ELISA. $p<0.05$ was used as significant difference during data analysis Injection of UA induced significant elevation of uric acid and cre atinine level after 7 and 14 days followed by significant increas of glomerulosclerosis and tubular injury score in uric acid grou compared to control ($p<0.05$). Both UA7 and UA14 groups als

Effect of Tryptophan on Testosterone, Estradiol, Luteinizing Hormone and Leydig Cells in Rats

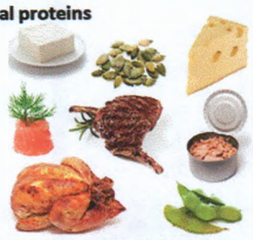


Eryati Darwin, Angga Putri and Yenni Aryaneta

Faculty of Medicine, Andalas University, Padang-Indonesia

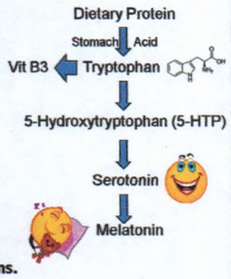
INTRODUCTION

- Tryptophan: essential amino acid
- Found in plant and animal proteins
  - cottage cheese
  - brown rice
  - avocados
  - bananas
  - walnuts
  - tomatoes
  - soy protein
  - meat and turkey
  - tarchy carbohydrates (bread, pasta, carrots and potatoes)



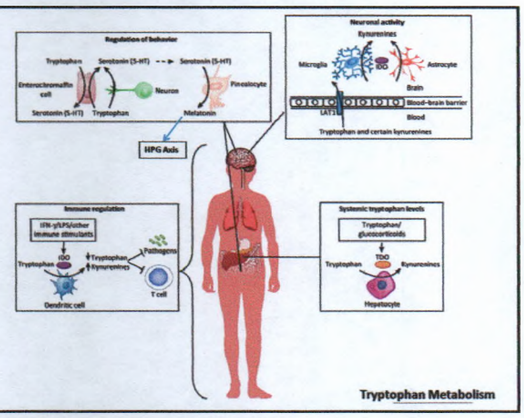
TRYPTOPHAN

- Precursor of serotonin:
  Important effects to
  - sleep
  - stress
  - mood
  - memory
  - male sexual behavior
- Converted to melatonin:
  - regulates diurnal rhythms
  - influences immune system
  - influence reproductive systems.



Tryptophan – Serotonin - Melatonin

- L-tryptophan, an amino acid precursor *via* serotonin metabolic pathway.
- In rats, serotonin is highest during the light part of the light–dark cycle.
- In humans, there is certainly an interaction between bright light and the serotonin system.
- Biosynthesis of melatonin involves the four-steps process of tryptophan hydrolysis and acetylation of 5-hydroxytryptamine (serotonin) to form melatonin.
- A specific enzyme, N-acetyltransferase (NAT) is considered as a rate-limiting enzyme for melatonin synthesis .
- Melatonin is release undergoes a circadian rhythm with maximal levels during the darkness and the lowest plasma concentrations during the day.



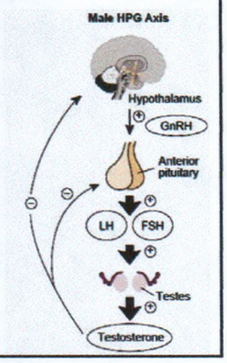
Tryptophan Metabolism

Melatonin and Male Reproduction

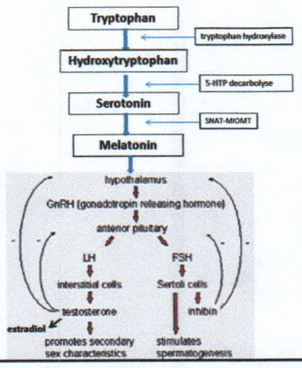
- Melatonin (5-methoxy-N-acetyltryptamine) was discovered in 1958 by Lerner in the extract of the pineal gland
- The main hormone secreted by the pineal gland, mainly during the dark phase of the circadian cycle.
- Influence sexual maturation and reproductive system through specific high affinity receptors in the hypophyseal pars tuberalis and hypothalamic suprachiasmatic nucleus
- The role of melatonin in the regulation of reproduction in humans is still controversial
- Evidence supporting a melatonin-reproductive hormone relationship relies on findings of abnormal melatonin secretion in disorders of the reproductive system and on pathologies of the pineal gland which are associated with clinical abnormalities of the reproductive hormones

Male HPG Axis

- GnRH is made in the hypoyhalamus and travels to the pituitary where it stimulates FSH and LH secretion.
- FSH is necessary sperm maturation
- LH binds to leydig Cells to stimulate testosterone secretion; and the testes to produce androgen
- Testosterone stimulates sex drive.
- Aldosterone regulates electolttes in the body.
- Inhibin acts as a negative feedback to slow the release of FSH and GnRH.



Concept



Aim of Study

- To determine the effect of tryptophan on the testosterone, estradiol, luteinizing hormone levels and the number of Leydig cells

METHODS

- The 4 groups of 7 male Rattus Norvegicus
  1. Control group
  2. P1: IP injection of Tryptophan 40 mg/ KgBW
  3. P2: IP injection of Tryptophan 50 mg/ KgBW
  4. P3: IP injection of Tryptophan 60 mg/ KgBW

14 days

- Blood was collected to determine the level of testosterone, estradiol, and luteinizing hormone
- Testis were processed histopathologically to determine Leydig cells

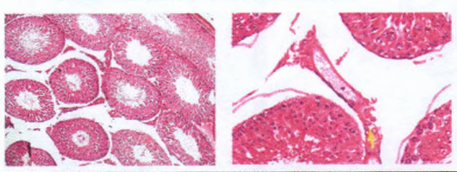
RESULTS

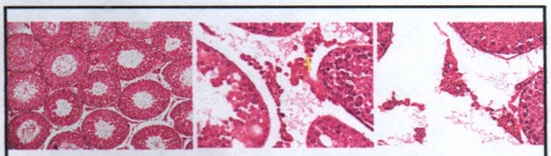
Table 1: The Level of Testosterone, Estradiol and Luteinezing Hormone (LH) in Control and Tryptophan treated Group

GROUP	TESTOSTERONE (nmol/l)	ESTRADIOL (pg/dl)	LH (nmol/l)
Control	13,78 ±2,33	8,65±0,74	5,60±0,30
P1	12,95±1,55	9,87±1,01	3,78±0,29
P2	11,03±0,54	10,17±0,85	3,32±0,35
P3	13,57±1,79	8,08±0,53	2,96±0,28

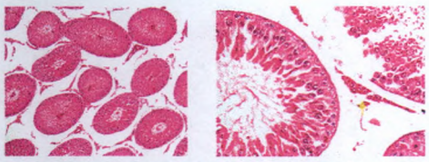
Table 2: The Number of Leydig Cells on Testis of Control and Tryptophan treated Group

GROUP	LEYDIG CELLS (%)
Control	22,50±1,22
P1	21,00±1,09
P2	19,66±1,03
P3	17,66±081





Histological appearance of rats tubuliseminiferi (P1 and P2)



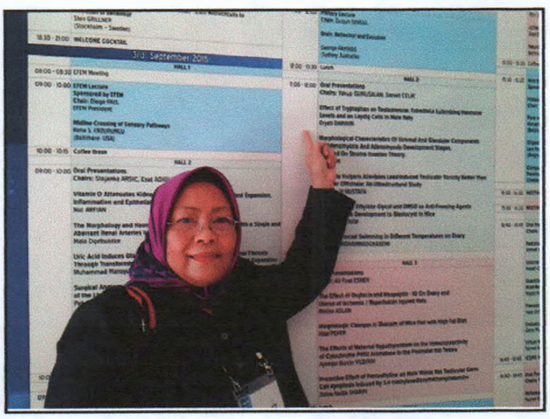
Histophatological appearance of P3 rats tubuliseminiferi

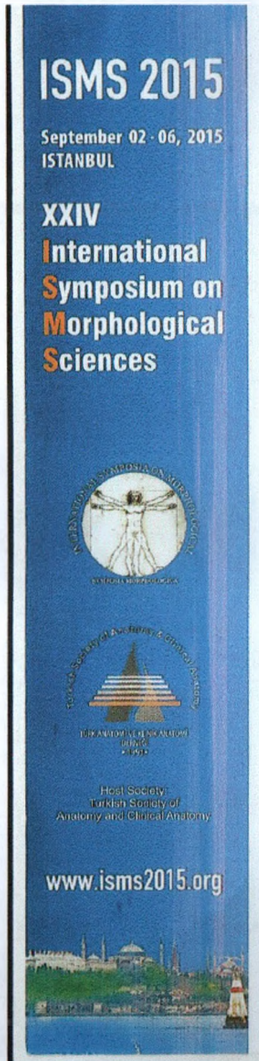
DISCUSION

- In this study, hormone concentrations were determined in the morning, therefore not allowing evaluation of pulsatile secretion of these hormones
- The time and dose of tryptophan administration is critical for the activity of melatonin on its receptors.
- In study in which rats were loaded with huge amounts of pure tryptophan, extra melatonin leaks from the intestine into the bloodstream
- Melatonin exerts and inhibitory effect on the hypothalamopituitary-gonadal axis, it decreases the function of the gonads (the testes) by decreasing the stimulation of these organs by the brain.
- Hormonal control of spermatogenesis varies among species. However, it is known that initiation of spermatogenesis occurs at puberty due to the interaction of the hypothalamus, pituitary gland, and Leydig cells.

Conclusion

- Low Dose of tryptophan reduce testosterone and LH level, but increase estradiol level
- The Higher dose of tryptophan reduce LH level and the number of Leydig cells





ERYATI DARWIN

has participated in the scientific program of the XXIV International Symposium on Morphological Sciences held in İstanbul, September 2 - 6, 2015 with an oral presentation.

Prof. Dr. Hakan Hamdi Çelik
Co-president

Prof. Dr. Erdoğan Şendemir
Co-president