

PROCEEDING

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**ENVIRONMENTAL HEALTH PERSPECTIVE ON SUSTAINABLE
DEVELOPMENT GOALS : THE CHALLENGES AND OPPORTUNITIES
IN ASIA - PACIFIC REGION**

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The 1st Environmental Health International Symposium 2017

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Welcome Participants,

Welcome to the 1st EHIS of the Poltekkes Kemenkes Jakarta II that took place on August 21 - 23, 2017 at Millenium Hotel Sirih, Jakarta.

Thank you to Prof. Cordia Chu from Griffith University-Australia, Marion Herens from Nedherland and Prof. Rahayu Imam Santoso from International Islam University Malaysia.

The symposium provided a platform for professionals, practitioners, academics, educators and researchers in the various fields of Environmental Health to disseminate and share the latest research, knowledge and experiences. The symposium hosted scholars from over 25 **cities** around the Indonesia and 3 countries, covering academic institutions and practitioners. The friendly atmosphere, the one on one opportunity for exchange and networking, and the multi-cultures exposure were cited among the top benefits from conference attendees. Each submitted abstract/paper is peer reviewed and only accepted abstracts/papers were presented.

About EHIS

Our goal is to bring scholars from various fields of environmental health and facilitate meaningful interactions. Hopefully this will lead to professional development opportunities for scholars and practitioners in environmental health. EHIS fosters a small conference setting (under 200 participants) with multi-cultures delegates. This small setting offers professional development opportunities for scholars and practitioners through personal contact, meaningful interactions and networking.

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Thankyou.

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THE EXTRACT *Glycine max* (L.) Merr. OF DETAM II VARIETY ON LEAD LEVEL AND KIDNEY'S HISTOPATHOLOGY IN MICE WITH LEAD INTOXICATION

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ABSTRACT

Lead intoxication into the body to produce free radical compounds. Kidney is one of the excretory organs that are susceptible to free radical attack. Detam II variety of soybean is a type of superior soybean varieties in Indonesia containing isoflavones, allegedly useful to reduce the accumulation of lead in the body and protect the kidneys.

The aim this study was determined the effect extract soyabean of Detam II variety obtained by maceration kinetic using 90% methanol solvent on kidney's histopathology and lead level in mice blood

The study was randomized pre test post test control group design. Animals model were 30 mice divided into 6 groups, placebo, negative control (lead only), positive control (soybean extract only), test group (soybean Detam II variety) and gold standard group (lead + Vit C). All groups were exposed with acetate lead at a dose of 25 mg / kg BW/day except the placebo group and positive controls. The process of intoxication was continued by giving Detam II variety of soybean extract at doses of 75 mg / kg BW in positive control group and test group. In the gold standard group was given vitamin C dose of 64 mg / kg BW/day and aquadem in the placebo group for seven days.

The results were appreciated by extract *Glycine max* (L.) Merr. of Detam II variety on blood lead levels and effectively to repair kidney's histopathology.

Conclusion: Extract *Glycine max* L. Merr. of Detam II variety has lowering lead levels in blood and effectively to repair kidney's histopathology.

Keywords: *Extract Glycine max* L. Merr., *Detam II* variety, lead levels, kidney's histopathology

INTRODUCTION

Lead is either the problems of contamination in the environment (Ercal, 2001) (Flora, 2008). The port of entry of lead into the body can trigger the formation of free radicals that can damage cells-tissues including the kidney, enzymes and DNA (Bagchi,1998) (Chiusolo. 2010) (Halliwel, 2001)

There is a defense mechanism that keeps the body's balance against free radicals, ie antioxidants (Kunwar et al., 2011). Normally in our bodies, the antioxidants can neutralize

free radicals such as superoxide dismutase (SOD), glutathione peroxidase (GPx) and catalase (CAT) (Gosh, 2010). The Lead contamination continuously in the body causes imbalance antioxidants and free radicals or called oxidative stress. Thus, antioxidant supplementation from outside the body can be used as an alternative method (Khaki et al., 2010). The one of the natural antioxidants is isoflavones and its can be found in various types of plants, one of which is mostly soybean (*Glycine max*) (Setchell, 1999). The presence of antioxidants in soybeans, motivated us to study of the effect *Glycine max* on blood Lead levels in blood and kidney's histopatologic mice with lead intoxication.

METHOD AND MATERIALS

Soybean seed (*Glycine max*) Detam II varieties were extracted using kinetic maceration method. The first stage maceration uses n-hexane and the next stage with 90% methanol. The filtrate of second stage mastery was concentrated with the rotary evaporator and waterbath electric until the viscous extract was obtained (Rostagno, 2009). The extract was identified of flavonoid content qualitatively using Thin Layer Chromatography (TLC) method. The sample contains flavonoids if the stain shows blue and green fluorescence on observations under UV light $\lambda = 365$ nm and there is a yellow spot after the evaporation of TLC results with ammonia vapor (Handa, 2008).

25 of mice (*Mus musculus* BALB/c) were divided into five groups: placebo, negative control, positive control, test and comparison. Mice were given lead with dose 25 mg / kg/ day, except placebo and positive controls. For 7 days then, positive control and test groups were treated with soy extract, dose 0,23 g soy extract/kg weight/day. The comparison group was treated with vitamin C, dose 64 mg /kg, placebo and negative control groups only treated with aquadest.

After all treatments were finished, mice blood was taken for determine Lead levels with AAS and the kidneys were taken for determine percent of cell damage by microscopic observation. The data of blood lead levels and percent of damage renal's cell were done with One Way ANOVA.

RESULTS AND DISCUSSION

1. Flavonoid Identification

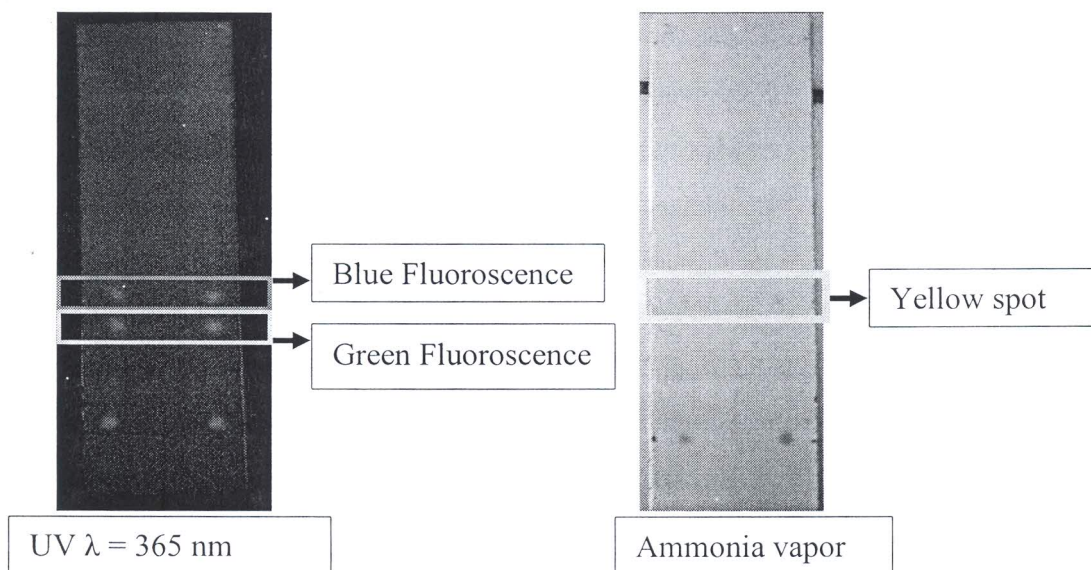


Fig 1. The result of Flavonoid in extract Glycine max of Detam II variety

2. The result of Lead Level In Seed and Extract of Glycine Max Detam II Variety

The results showed that seed of Glycine max Detam II variety contained Lead at 0.15 ppm. The lead level in extract of Glycine max Detam II variety is 0.007 ppm

3. The result of Lead Level in mice blood

Table 1. Results of Lead Level In Mice Blood

	Placebo group	Negative control group	Positive control group	Test group	Comparison group
Blood lead level (ppm)	0.306 ± 0.029	0.352 ± 0.056	$0.288^* \pm 0.031$	0.329 ± 0.043	$0.271^* \pm 0.087$

(* = different significantly with negative control group)

After a post hoc test multiple comparison of LSD, the result between of negative control group and test group (Detam II soybean) was 0,509. It showed no significant difference between negative control group and test group with treated Detam II soybean extract. The Detam II soybean extract was not effective in lowering lead levels in blood.

However, different results were obtained between the negative control group and the comparison group with a significance value of 0.027. This is illustrates that vitamin C significantly lowering lead levels compared to mice that only get aquadest. Lead levels(0.271

ppm) in comparison group (treated with vitamin C) were lower than mice given only aquadem (0.352 ppm). It be concluded vitamin C is effective in lowering Lead levels in the blood.

4. Result of Kidney's histopathology

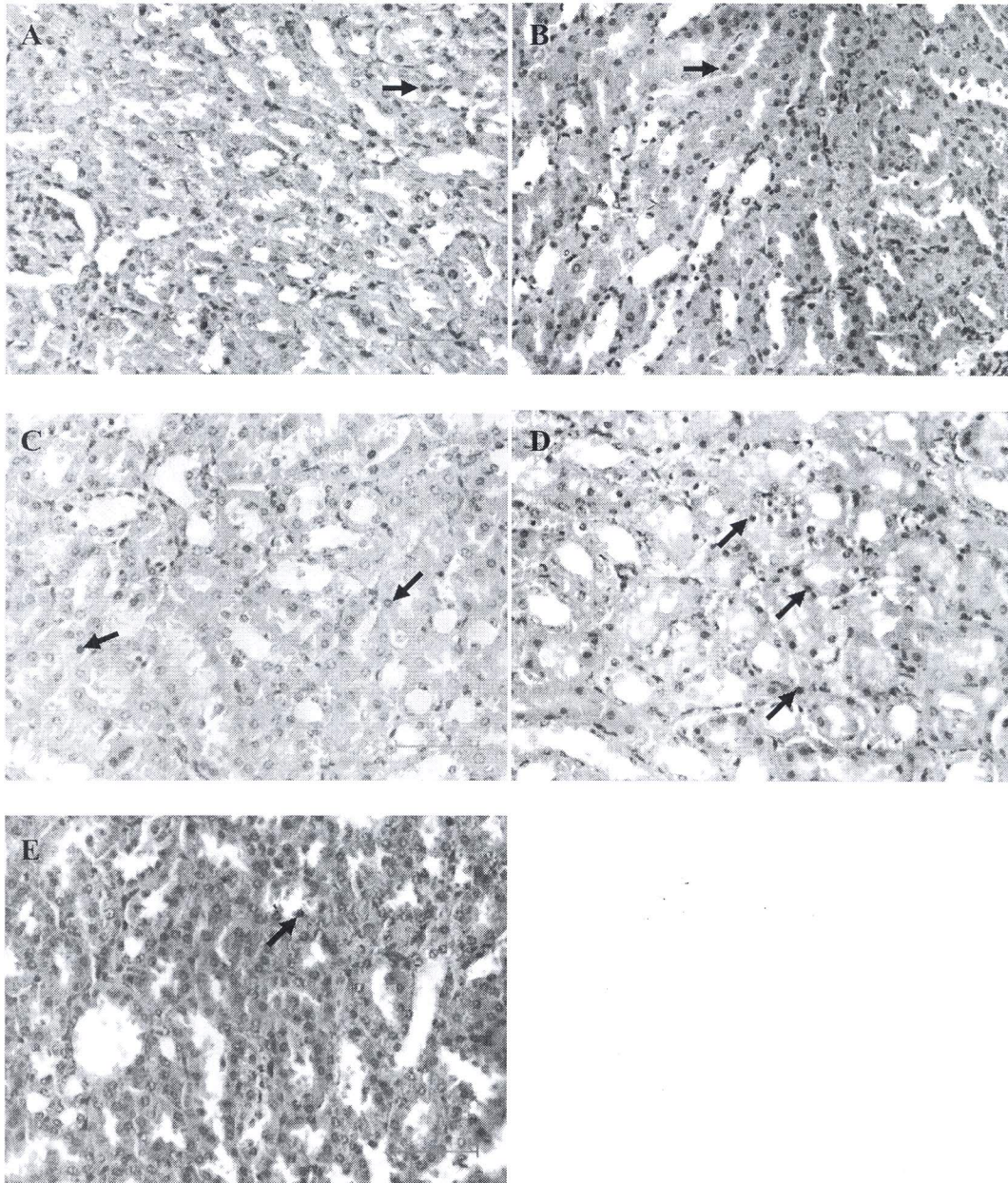


Fig 2. Results of Kidney's histopathology

Description: Magnification in 400x;

A = Plasebo Group; B = Negative Control Group; C = Positive Control Group;

D = Test Group; E = Comparison Group;

Black Arrow = Damaged Cell; Blue arrow = Live Cell

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