

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Stimulant Effect of Edible Bird's Nest (*Aerodramus fuchipagus*) from Borneo on White Mice.

Dita A D Sandi* and Satrio W R.

Sekolah Tinggi Ilmu Kesehatan Borneo Lestari 8nd Kelapa Sawit Street, South Loktabat, South Banjarbaru, Sout Borneo, 70714.

ABSTRACT

Indonesia is the largest country that produce of edible bird's nest (EBN) in the world, an average production of 500-600 tons (period of 2011). Sever- al regions in Indonesia, especially Kalimantan have a great quality in the producing of the edible bird's nest (*Aerodramus fuchipagus*). Edible Bird's nest (*Aerodramus fuchipagus*) showed the presence of small amounts of fat including oleic acid (ODA) (9-octadecenoic acid) and palmitic acid (Hexadecenoic acid). The substance is believed to be used by the body to increase stamina by stimulant effect. The objective of this research is prove of stimulant effect of Edible Bird's nest (*Aerodramus fuchipagus*) from South Borneo by stimulant test method according to Turner (1965). Mice were divided into 5 treatment groups i.e. was given aquadest as negative control, was given caffein as positive control, was given Edible Bird's nest 75 mg/40 g BW; 100 mg/40 g BW; 150 mg/40 g BW as treat- ment group. After 45 minutes intervention, mice was given intraperitoneal phenobarbital dose 60 mg/Kg bodyweight. The measured variable is the time (minutes) to hold the mice until fall asleep. The time (minutes) to hold the mice until fall asleep after was injected phenobarbital was caffeine as positive control i.e. 53.18 \pm 10.46 minutes, followed by mice given EBN doses 150 mg/40 g BW; doses 100 mg/40 g BW and doses 75 mg/40 g BW i.e. 36.02 \pm 8.93 minutes; 29.67 \pm 4.29 minutes and 23.94 \pm 2.24 minutes; negative control i.e. 11.57 \pm 5.54 minutes. Data analysis showed the sig value. 0,010, it can be concluded that there was influence of the treatment group to the the time to hold the mice until fall asleep after was injected phenobarbital. Mann-Whitney analysis showed there was not a significant difference in the The time to hold the mice until fall asleep after was inject- ed phenobarbital between caffeine and Edible Bird's nest (*Aerodramus fuchipagus*) doses 150 mg/40 g BW. Edible Bird's nest (*Aerodramus fuchipagus*) doses 150 mg/40 g bodyweight can be said to be potential as a stimulant.

Keywords: *Aerodramus fuchipagus*, tonic effect, stimulant test method, edible bird's nest

*Corresponding author

INTRODUCTION

Indonesia is a country that rich in natural resources, with this natural resource, the Indonesian is able to get treatment from nature. One of them is Edible Bird's Nest which is a very popular commodity is used as food or beverage. Indonesia is the largest country that produce of edible bird's nest in the world, an average production of 500-600 tons (period of 2011)(IETO Taiwan, 2012). Several regions in Indonesia, especially Sumatra and Kalimantan have a great quality in the producing of the edible bird's nest (*Aerodramus fuchipagus*) (Team Writer PS, 2009).

Edible Bird's nest has a high nutrient content. Edible bird's nest have the higher carbohydrate and protein content with very low fat content than the other food (milk, chicken eggs and quail eggs). Complete amino acid of protein makes the edible bird's nest can be absorbed perfectly by the body. Proteins are constituents of cell and play an important role in most biological processes (Peter, 2014). According to research Hamzah *et al.* (2013) showed protein content as the most abundant component in Edible Bird's nest (*Aerodramus fuchipagus*) ranging from 59.8-65.4%, followed by carbohydrate content ranging from 8.5%-16.4% and fat content ranging from 0.01-0.07%. From five location, the white edible bird's nest (*Aerodramus fuchipagus*) from Kalimantan has the highest protein content, has carbohydrate content ranging from 8-10% and has fat content ranging from 0.03-0.04%.

Peter (2014) showed Edible Bird's nest (*Aerodramus fuchipagus*) has a carbohydrate content (140.77 75.32 mg/g samples) higher than milk, chicken egg and quail egg, also has the largest protein content. His research showed the presence of small amounts of fat including oleic acid (ODA) (*9-octadecenoic acid*) and palmitic acid (*Hexadecenoic acid*) (Peter, 2014). The high content of carbohydrates, proteins and fats allow edible bird's nest to be a source of energy to maintain and increase stamina.

Sandi and Rahmatullah has proven tonic effect of the white edible bird's nest (*Aerodramus fuchipagus*) doses 150 mg/40 g BW by swimming time durability method with caffeine as positive control. Tonic effects are effects that stimulate all the systems and organs and improvement of muscle tonus cells. This tonic effect occurs due to the stimulant effect that is performed on the central nervous system. This tonic effect can be classified into psychostimulant classes. The objective of this research is prove of stimulant effect of Edible Bird's nest (*Aerodramus fuchipagus*) from South Borneo by stimulant test method.

MATERIALS AND METHODS

Materials

Edible Bird's nest (*Aerodramus fuchipagus*) taken from Buntok, Middle Borneo, Indonesia. Materials that used i.e. phenobarbital and caffeine.

Sample Preparation

Edible Bird's nest (*Aerodramus fuchipagus*) was cleaned of dirt and soaked with water for 10 minutes. Then, it was steamed at low temperature 34 degree celcius for 10-15 minutes (Decree of the Head of Agricultural Quarantine, 2010; Dinar *et al.*, 2005). Further smoothed. Then, it was mixed with water as required concentration.

Stimulant test method

The male white mice were divide into five groups (each of 3 mice)

i.e. group 1 was given aqueduct (negative control), group 2 was given caffeine (positive control) dose 100 mg/Kg bodyweight, group 3 was given edible bird's nest dose 75 mg/40 g bodyweight, group 4 given edible bird's nest dose 100 mg/40 g bodyweight and group 5 given edible bird's nest dose 150 mg/40 g bodyweight. Tonic effect was tested by stimulant test method according to Turner (1965) i.e. after 45 minutes intervention, mice was given intraperitoneal phenobarbital dose 60 mg/Kg bodyweight. The measured variable is the time (minutes) to hold the mice until fall asleep.

RESULTS AND DISCUSION

Based on the empirical experience, the Edible Bird’s nest (*Aero- dramus fuchipagus*) is believed has an effect to increase stamina or com- monly known as tonic effect. Tonic effect can be classified into psychos- timulant classes. Psychostimulant compounds can increase psychic activi- ty, relieve fatigue and improve the ability to concentration and capacity (Mutschler, 1986). Tonic effect can be test by stimulant test method. Stim- ulant test method was tested by testing the time to hold the mice until fall asleep used phenobarbital as a sleep inducer. Tonic effect can increase psychic activity and improve the ability to concentration and capacity. The longer the time (minutes) to hold the mice until fall asleep after is injected phenobarbital, the tonic effects is better.

Table 1: Result of The time to hold the mice until fall asleep after is injected Phenobarbital

Group	Average of The time to hold the mice until fall asleep after is injected phenobarbital
Negative control	11.57 ± 5.54
Positive control	53.18 ±10.46
Edible Bird’s nest doses 75 mg/40 g bodyweight	23.93 ± 2.28
Edible Bird’s nest doses 100 mg/40 g bodyweight	29.67 ± 4.29
Edible Bird’s nest doses 150 mg/40 g bodyweight	36.02 ± 8.93

Result of stimulant test method can be seen in Table 1. Table 1 showed that the longest the time (minutes) to hold the mice until fall asleep after was injected Phenobarbital was caffeine as positive control

i.e. 53.18 ±10.46 minutes, followed by mice given Edible Bird’s nest (*Aerodramus fuchipagus*) doses 150 mg/40 g bodyweight i.e. 36.02 ± 8.93 minutes. When compared to positive control (caffeine), Edible Bird’s nest (*Aerodramus fuchipagus*) doses 150 mg/40 g bodyweight there was a dif- ference of 17 minutes.

Result of The time to hold the mice until fall asleep after was injected phenobarbital for negative control was 11.57±5.54 minutes. If was compared the time Edible Bird’s nest (*Aerodramus fuchipagus*) doses 150 mg/40 g bodyweight showed effect tonic of Edible Bird’s nest (*Aerodra- mus fuchipagus*) doses 150 mg/40 g bodyweight, because there was ex- tention of time was 25 minutes. From Figure 1 can be seen that the more doses Edible Bird’s nest (*Aerodramus fuchipagus*) was given the longer the time (minutes) to hold the mice until fall asleep after was injected phe- nobarbital.

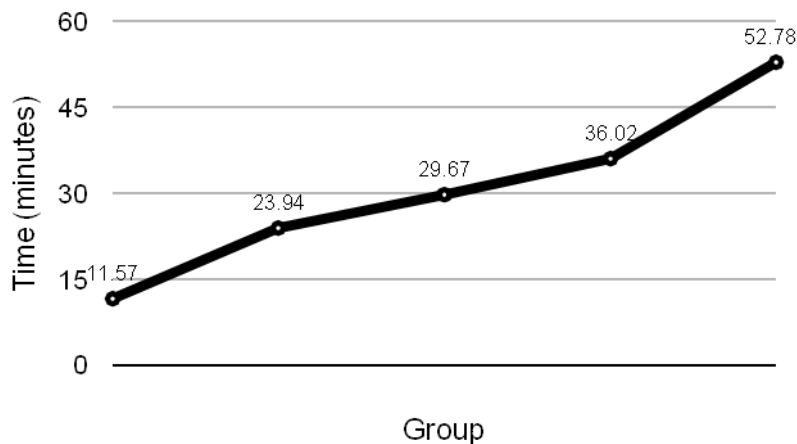


Fig 1: Result of The time to hold the mice until fall asleep after is injected Phenobarbital

The results of data analysis showed the same thing. The analysis showed the sig value. 0,010, it can be concluded that there was influence of the treatment group to the The time to hold the mice until fall asleep after was injected phenobarbital by each treatment group. Mann-Whitney analysis was performed, and it was found that for each group there was a significant difference in the The time to hold the mice until fall asleep after was injected phenobarbital, except for positive control (caffeine) with Edi- ble Bird's nest (*Aerodramus fuchipagus*) doses 150 mg/40 g bodyweight.

Showed that stimulant effect by positive control and Edible Bird's nest (*Aerodramus fuchipagus*) doses 150 mg/40 g bodyweight in male white mice was given phenobarbital as induced sleep has no significant difference, so the Edible Bird's nest (*Aerodramus fuchipagus*) doses 150 mg/40 g bodyweight can be said to be potential as a tonic. According to previous research, tonic effect of Edible Bird's nest (*Aerodramus fuchipagus*) by swim test showed no significant difference between positive con- trol group (caffeine) and Edible Bird's nest (*Aerodramus fuchipagus*) dos- es 150 mg / 40 g bodyweight for the duration of swimming (Sandi & Rah- matullah, 2016).

CONCLUSION

Edible Bird's nest (*Aerodramus fuchipagus*) doses 150 mg/40 g bodyweight can be said to be potential as a stimulant if compared with caf- fein as positive control. The more doses Edible Bird's nest (*Aerodramus fuchipagus*) was given the longer the time (minutes) to hold the mice until fall asleep after was injected phenobarbital.

ACKNOWLEDGEMENT

This research was funded by a grant of research grants from the Ministry of Research and Technology and Higher Education Republic of Indonesia.

REFERENCES

- [1] Dinar DD, Nashrullah and Prasetyo TA : *Prototipe Alat pengering (Non Vacuum) pada Industri pencucian Sarang Walet*. Jurnal Teknik Mesin 2005; 2 (2).
- [2] Hamzah Z, Ibrahim NH, Sarijini, Hussin K, Hashim O & Lee BB : *Nutrition- al Properties of Edible Bird Nest*. Journal of Asian Scientific Research 2013; 3(6):600-607.
- [3] IETO : Decree of the Head of Agricultural Quarantine Council, Number: 374 / Kpts / KH.210 / L / 5/2010 on the Handbook of Handling and Inspec- tion of Edible Bird's Nest and Sriti Nest, Agricultural Quarantine Council. Jakarta 2010.
- [4] Mutschler E : Dynamics of Drugs, translated by Widiyanto, M.B., and Ranti, A.S. Publisher of ITB 1986.
- [5] Norhayati MK, Azman & Nazaimoon W. *Preliminary Study of the Nutrition- al Content of Malaysian Edible Bird's Nest*. Mal J Nutr 2010; 16 (3) : 389-396.
- [6] Peter CYG : *Authentication of Edible Bird's Nest using advanced Analyti- cal T echniques and Multivariate Data Analysis*. Singapore : National University of Singapore, M.Sc Thesis 2014.
- [7] Team Writer : Complete Guide Swallow. Penebar Swadaya 2009.
- [8] Sandi DAD and Satrio WR : *Testing Tonic Effects of Edible Bird's Nest (Aerodramus fuchipagus) on Male White Mice With Swim Test Method*. Pharmascience Journal 2016; 3(2) : 29-35.