IBJ
Indonesian Biodiversity Journal
http://ejurnal-mapalus-unima.ac.id/index.php/ibj

indonesian. biodivers. j.
VoL.2. No.2: 1-11
ISSN : 2722-2659
doi :

Application Of Apis dorsata Binghami Bee Nest Extract On The Effects Of Human Blood Lipid Reduction

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Received June 25, 2021 Accepted June 25, 2021

Abstract

Honey, royal jelly, bee pollen, bee wax, propolis, bee glue, and bee venom/ apitoxin are among the items produced by honey bees. Honey, pollen, bees, eggs, larvae, and pupae are all stored in the A. dorsata Binghami beehive. Secondary metabolites and bioactive phenolic compounds (phenols, phenolic acids, esters, flavors, dihydroflavones, flavanols, chalcones, and phenolic glycerides), essential oils (mono and sesquiterpenes), polysaccharides, amino acids, amines, lactones, quinones, steroids, and vitamins) can all be found in honeycomb. The goal of this study is to see how A. dorsata Binghami honeycomb tea affects blood lipid levels in humans after 14 days of consumption in a small group of male and female volunteers who were given a 2 gram tea bag extract of A. dorsata Binghami honeycomb simplicia to drink once a day to see how it affects lipid levels (total cholesterol, LDL, HDL, and TAG) in human blood. Total cholesterol (140.56 mg/dL), triglycerides (140.93 mg/dL), LDL (85.92 mg/dL), and HDL (21.49 mg/dL) were all found to be high in humans. As a result, "The Use of A. dorsata Binghami's Honeycomb Extract on the Effect of Reducing Human Blood Lipids" can lower lipid levels.

Key *Word* : *Apis dorsata* Binghami, antihyperlipidemia, forest beehive teabags, people group test.

INTRODUCTION

Bees are insectivorous animals that may create a variety of items that have been proven to be beneficial to human health since ancient times. Honey, Royal Jelly, Sari 'Bee Pollen' flour, 'Bee-Wax' night candles, 'propolis' bee glue, and bee venom / Apitoxin 'Bee Venom' are only a few of the significant items produced by bees. The bee A. Dorsata is divided into two subspecies: A. Dorsata Dorsata, which lives on the island of Nusa Tenggara, and A. Dorsata Binghami, which lives on the island of Binghami. One endemic honey bee species that can

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only be found on Sulawesi Island and has never been grown (Sakagami et al. 1980; Raffiudin and Crozier 2007; Hepburn and Radloff, 2011).

The A. Dorsata bee, commonly known as the forest honey bee, has the largest body and nest, with a single-shaped nest, nesting in an open area, and usually hangs from a large tree branch. As a source of nectar and pollen, bees A. Dorsata Binghami consume nectar from indigenous Sulawesi plants Ficus Minahasae, Elmerelelia Celebrica L., and Lancium Minahasae L. (Mokosuli, 2013).

Propolis contains a variety of chemicals, including flavonoids and antioxidant vitamins, which can preserve the lipid membrane of the peroxidas process (2009). Flavonoids play a role in lowering total blood cholesterol levels by inhibiting HMG-KOA reductase activity, inhibiting Acyl-CoA Cholesterol Acyltransferase enzyme activity (Acat), and inhibiting cholesterol absorption in the digestive tract. Propolis' anti-hyperlipidemia properties help to lower the risk of cardiovascular disease and other diseases' consequences (Rumanti, 2011).

Hyperlipidemia is a disorder in which the lipid or fat in the blood has abnormal symptoms, defined by excessive cholesterol and triglyceride levels. If the levels are high enough, plaque can grow up and deposit on the walls of blood vessels. As a result, it clogs the arteries, resulting in cardiovascular disease such as heart attacks and hypertensive strokes, peripheral arteries, rheumatic heart disease, default heart disease, and heart failure.

The goal of this study is to see how forest honeycomb extracts A. Dorsata Binghami affect lipid levels in human blood. The Simplicia extract of Honeywood A. Dorsata Binghami was used. Mokosuli et al. (2019) earlier found that the forest honeycomb extract A. Dorsata Binghami can be used as a bioactive source of antihiperlipidemia in mice as a test animal. However, no studies have been done on the effect of Honeywood A. Dorsata Binghami extract in lowering blood lipids in humans. Hyperlipidemia-related disorders, on the other hand, are common in Indonesia (BPPS, 2019).

Materials and Method

Honeycomb honey forest samples Fresh-scented cloves were obtained by A. Dorsata Binghami. The clove aroma is generated by the location in Kombi Village, Minahasa Regency, which is directly in the center of a clove plantation.

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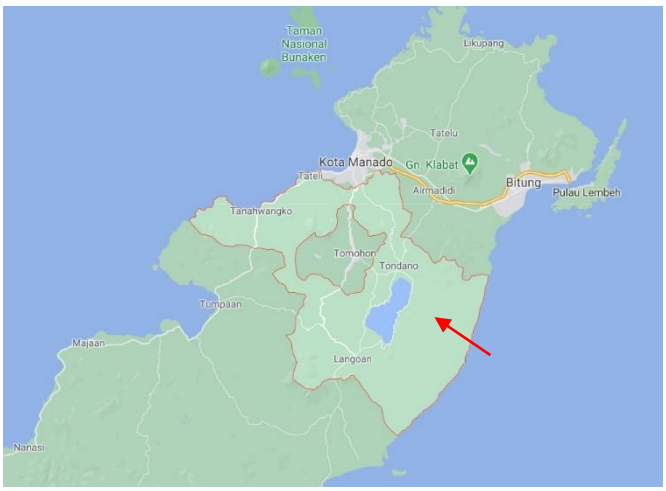
Gloves, masks, aluminum foil, tablespoons of plastic materials, blenders, ovens, analytic scales, electric adhesive tools 'impulse sealers,' food grade, bags and tea straps (Food Grade), and a set of test tools were all employed in this investigation. Tensions, Stethoscope, Blood Lanset Needles 'Blood Lanset', Alcohol Swab, 70% Alcohol, White Cotton, Tissue (Lipid Pro Test Strip Lipid Pro "Infopia" Osang Healthcare), Lipid (Lipid Pro Test Strip Lipid Pro "Infopia" Osang Healthcare), Lipid (Lipid Pro Test Strip Lipid Pro "Infopia" Osang Healthcare), Lipid (Lipid Pro Test Strip Lipid Pro "

A sample of honeycomb honey forest honey A. Dorsata Binghami and human blood as a measuring variable were employed in this investigation.

Research Methods

This study employs a descriptive approach. The study included the drying of Honeycomb A. Dorsata Binghami at room temperature, the production of honeycomplic sarch, simplecic packaging in the shape of a teabag, measuring the effect of blood lipid reduction in adults over 40, and data analysis.



Picture 1 : Photo of A. dorsata Binghami beehive sampling location at a clove plantation in Ds. Kombi, District. Kombi, Minahasa. (Source: Google Maps.)

Variable in Research

In this research, the variable is:

Honeycomb tea made using Honeymother's honeycomb extract. In this study, Simplisia extract was used to extract honey forest A. Dorsata Fresh Binghami from Kombi Village in Minahasa.

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The lipid content of human blood. The lipid content that was determined was as follows:

2.1. Total cholesterol: total cholesterol is the sum of the good, bad, and triglyceride levels in a person's blood.

2.2. LDL cholesterol (low density lipoprotein) is commonly referred to as bad cholesterol since it builds up on artery walls and restricts blood flow.

2.3. HDL cholesterol (high density lipoprotein) is commonly referred to as cholesterol when it accumulates on arterial walls, clots, and slows blood flow.

2.4. Keywords: Triglycerides are a form of blood fat that is used to create energy but can increase the risk of heart disease and stroke if levels are too high.

Procedure for Conducting Research

Making a Nest Apis Dorsata Binghami Extract

A. dorsata Binghami nest was freshly brushed and stored at room temperature for three days before being cooked in an oven at 80 ° C for 45 minutes and finely mixed till it became a powder.

Making a Nest Apis Dorsata Binghami Extract

A. dorsata Binghami nest sample that has been dried and blended until it is a powder weighing 2 grams and then wrapped in paper bags that have passed the safe test for food grade food.

Human Blood Sampling

Blood is drawn through a Venna at the middle finger's tip, and the finger is cleaned with alcohol before the blood is drawn. The finger was then punctured to cause bleeding with a blood lanset needle (Blood Lanset). The blood that came out initially was cleansed first, and then the fingertip was pressed until the blood returned. After that, blood was drawn with a blood spoon and dropped on the Lipid Pro Test Test Strip Lipid Pro "Infopia" Osang Healthcare strip test. Wait until the tool reaches the end of its countdown.

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Experimental Design

This study employs a descriptive approach. The research was carried out in a test of seven male and female volunteers with the age criteria of 40 years to the treatment of each consumption of honeycomb tea extract A. Dorsta Bingshami with measurement of lipid levels three times by following the steps - The protocol step from Lipid Pro Test Strip Lipid Pro "Infopia" Osang Healthcare.

Measuring Lipid Levels

A variety of lipid level test techniques are used to determine lipid levels (Lipid Pro Test Lipid Pro "Infopia" Osang Healthcare). Following the procedure procedures from Lipid Pro, lipid levels were measured three times: during the initial lipid profile 'baseline,' induction treatment after the 7th day, and induction treatment after the 14th day of drinking the Honeycomb Sarang Tea extract A. Dorsata Binghami.

Total cholesterol, low density lipoprotein, high density lipoprotein, and triglycerides in human blood are the parameters measured.

RESULTS AND DISCUSSION

Research Result

Apis Dorsata Binghami Nest Description

Honeywood Apis Dorsata Binghami samples were collected on-site at the plantation in Kombi Village, Kombi District, Minahasa Regency. Forest Honeycomb A. Dorsata Binghami was discovered on a banyan tree branch at a height of 7-10 m and harvested using the smoking procedure. The honeycomb A. Dorsata Binghami can grow to be one meter long, with a half-circle diameter of 1.3 meter. Honeycomb from the woods The nest of A. Dorsata Binghami is brown brown yellow with a sticky nest texture and honey. Binghami's A. Dorsata Binghami Dorsata Several others who lived in the area (Clove farmers and Honeybes Honey Honey Honey protector) aided with the taking in the morning at 6:30 a.m.

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Picture 2 : Photo of A. dorsata Binghami honey bee nest after being smoked. Personal documentation (February 2020.)

Honey Apis dorsata Binghami Simplisia Tea Honeycomb

Simplician powder forest honeycomb is made by airing for three days at room temperature while cleaning from Larva Bee A. Dorsata Binghami larvae. After that, heat it for 45 minutes in an oven at 80 degrees Celsius. After then, the forest honeycomb is ground into a fine powder. The dried Sarang Sarang A. Dorsata Binghami weighs 2 grams and is subsequently packaged in paper bags (that have passed the safe test for food grade food).

Teabag Application Forest Honeycomb on Volunteers

Honeycomb tea is consumed in a dose of 1x1 for a period of 14 days. 250 ml boiling water is used to brew the teabow tea. Seven participants, ranging in age from 40 to 57 years, were tested for the effect of honeycomb teabow on the reduction of human blood lipids. Women's dominating volunteer and the rest of the men's gender. The body mass index is calculated using the volunteer's weight and height to determine lipid profiles in the body.

Measurement of Human Blood Lipids

The blood pressure of each volunteer is taken. After then, just the measurement of lipid content in volunteer blood was done.

Blood is drawn through a Venna at the tip of the middle finger; however, before drawing blood, wipe the finger with an alcohol swab. The finger was then pierced in the blood with the 'Blood Lanset' bloodsteed needle. The first blood is cleaned first, then the fingertip is pressed till it returns to the blood. Following that, blood was drawn with a blood spoon and then deposited on a strip test

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using the Lipid Pro instrument. Wait until the tool reaches the end of its countdown. Total cholesterol levels, LDL Low Density Lipoprotein, HDL High Density Lipoprotein, and triglycerides in the blood in humans were measured using the Lipid Pro test tool and the Lipid Pro Test Strip Lipid Pro "Infopia" Osang Healthcare protocol stages. The lipid levels were measured three times: during the measurement period of lipid profiles early in the day to zero 'baseline,' after the induction treatment on the seventh day, and finally after the induction treatment on the fourteenth day of the day consumed the intestine tea honeycomb extract a. dorsata Binghami.

The total cholesterol p1 total 250.33 mg / dL, triglycerides 289.14 mg / dl, LDL 163.46 mg / dl, and HDL 43.82 mg / dl are all measured at zero before the consuming treatment. Total cholesterol is 179.78 mg/dL, triglycerides are 234.87 mg/dl, LDL is 121.83 mg/dl, and HDL is 24.42 mg/dl at P2. Meanwhile, on P3, total cholesterol is 122.88 mg/dL, triglycerides are 193.00 mg/dL, LDL is 99.44 mg/dL, and HDL is 60.73 mg/dL. The "Infopia" lipid tool is used to determine lipid levels.

Total cholesterol P1 total 215.14 mg/dL, triglycerides 197.42 mg/dl, LDL 136.00 mg/dL, and HDL 23.42 mg/dL were discovered in the 7th day testing following intake treatment. Total cholesterol is 156.85 mg/dL, triglycerides are 175.85 mg/dL, LDL is 91.00 mg/dL, and HDL is 21.71 mg/dL on P2. Meanwhile, on P3, total cholesterol is 116.14 mg/dL, triglycerides are 148.71 mg/dL, LDL is 80.57 mg/dL, and HDL is 45.00 mg/dL. The "Infopia" lipid tool is used to determine lipid levels.

In the results of the three lipid profile measurements, the treatment after the 14th day of consumption showed an average P1 total cholesterol of 179.95 mg/dL; triglycerides 105.71 mg/dL; LDL 108.53 mg/dL; and HDL 3.03 mg/dL. At P2 had an average total cholesterol of 133.93 mg/dL; triglycerides 116.83 mg/dL; LDL 60.16 mg/dL; and HDL 19.00 mg/dL. Meanwhile, P3 has an average total cholesterol of 109.40 mg/dL; triglycerides 104.42 mg/dL; LDL 61.69 mg/dL and HDL 29.26 mg/dL. Lipid levels were measured using the Lipid Pro tool "Infopia"

Lipid profile data for 3 volunteers after the 14th day of treatment with nest teabag consumption

Group	Parameters of Lipids (Mg/dL)			
	Total Cholesterol	Triglycerides	LDL	HDL

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P1	179.95	105.71	108.53	3.03
P2	133.93	116.83	60.16	19.00
P3	109.40	104.42	61.69	29.26
Total	140.56	140.93	85.92	21.49

Discussion

Tea extract is provided as teabags. Honeycomb Simplisia In humans, A. Dorsata Binghami was able to demonstrate the impact of lowering total cholesterol, triglycerides, and LDL. The treatment of extracts after the seventh day of induction injection had no effect on total cholesterol or HDL levels, but it had a substantial effect on triglycerides and LDL levels. After the 14th day, induction extract therapy had a substantial influence on total cholesterol, triglycerides, LDL, and HDL levels.

The results of the extraction of ethanol honeycomb honey forest A. Dorsata Binghami has 20 types of flavonoid content, according to the results of the HPLC analysis (High Performance Liquid Chromatograph) carried out by (Mokosuli et al., 2019). The analysis' findings are based on the phytochemical group's composition, as well as honeycomb ethanol extractions including flavonoids (+++), alkaloids (+), steroid (++), saponin (++), and triterpenoid (++).

Flavonoids can block the enzyme HMG-KOA reductase, which is involved in cholesterol production (Dalwadi and Patani, 2014). Flavonoids help lower blood cholesterol levels by inhibiting HMG-KOA reductase and the Acyl-CoA Cholesterol Acyltransferase enzyme activity (Acat), as well as lowering cholesterrol absorption in the digestive tract. Flavonoids are polar chemicals that are soluble in a variety of nonpolar solvents, including ethanol, methanol, butanol, acetone, dimethyl sulfoxide, dimethyl formamide, and water (Mokosuli, 2008; Markham, 1998).

Flavonoids have been shown to lower total cholesterol, triglycerides, and LDL cholesterol levels in the blood. Artocarpus altilis flavonoids have a total level of flavonoids that can lower LDL, triglycerides, and total blood cholesterol in mice (fajaryanti et.al., 2016). The flavonoids in Hibicus Rosa-Sinensis Linn's ethanol extract can lower total cholesterol, LDL, and white mice triglycerides (Sikarwar and Patil, 2015). Steroid phytochemical groups, in addition to

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flavonoids, can imitate cholesterol in lipoprotein and kilomicron production. This may result in a drop in blood cholesterol levels (Kumar and Devanna, 2016).

Honey honeycomb extract forest can help to lower the risk of hyperlipidemia. The antihyperlipidemia properties of propolis honeycomb honey forest help to reduce the risk of cardiovascular disease and other diseases' consequences (Rumanti, 2011)..

According to research conducted by Krisnansari et al. (2012), a dose of propolis weighing 0.027 grams and a dose of propolis weighing 0.054 grams can lower total cholesterol, triglycerides, and blood LDL in white mice. Flavonoids are molecules that can protect the lipid membrane of the peroxidation process, among the numerous types of active compounds found in propolis (flavonoids, phenolic acids, esters, terpenoids, steroids, and amino acids) (2009).

ACKNOWLEDGEMENTS

Teabag extract is provided. Humans can consume Simplisia Honeycomb Honey Nest A. Dorsata Binghami because it is not harmful and has been demonstrated in scientific studies to have an effect on the drop in human blood lipids in volunteers with a history of hyperlipidemia or degenerative diseases.

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