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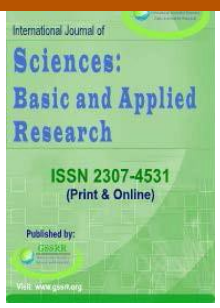

Nutrient Content and pH of Honey Propolis Trigona from Masamba, South Sulawesi Indonesia

Andi Nilawati Usman[a*], Yuliana Syam[b*], Rosdiana Natzir[c], Sutji Pratiwi Rahardjo[d], Muhammad Hatta[e], Indah Raya[f], Yuyun Widaningsih[g], Andi Zulkifli Abdullah[h], Ainurafiq[i]

[a]*Department of Epidemiology, Health College of RSU Daya, Makassar, Indonesia*
[b]*Department of Nursing, Hasanuddin University, Makassar, Indonesia*
[c]*Department of Biochemistry, Hasanuddin University, Makassar, Indonesia*
[d]*Department of Head and Neck Surgery, Hasanuddin University, Indonesia*
[e]*Department Immunology and Biomollecular, Hasanuddin University, Indonesia*
[f]*Department of Chemistry, Hasanuddin University, Makassar, Indonesia*
[g]*Department of Clinical Pathology, Hasanuddin University, Makassar, Indonesia*
[h]*Department of Epidemiology, Hasanuddin University, Makassar, Indonesia*
[i]*Department of Epidemiology, Haluleo University, Kendari, Indonesia*
[a]*Email: nilawatiandi@gmail.com*

Abstract

Honey and propolis have nutritional components that are beneficial to health, but data concerning nutrient components of honey mixed propolis is still lacking. This study aims to determine the nutrient components and PH honey given addition of propolis, that is honey propolis from Masamba Trigona bees, South Sulawesi, Indonesia. This type of research is laboratory research with sample85 grams Trigona honey mixed with 15 gram Propolis Trigona. The results showed that honey propolis Trigona of Masamba has low pH, high total phenols and quercetin content.

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* Corresponding author.

Examination vitamin A, C and E show that vitamin C content is the highest while the mineral from 3 types examined, namely Magnesium, calcium and zinc, the highest is calcium. Further research is needed on the benefits of honey Propolis Trigona Masamba for health.

Keywords: Honey; Propolis; Trigona; Masamba.

1. Introduction

Honey andpropolis as bee products produced naturally and have good avalaibility. Enrichment of honey with propolisis an innovation, it could increase the nutrient content of honey also makes propolis could be consumed by people who do not like the tastebut realize the benefit of propolis [1,2]. Trigona bees is stingless bee, they live in groups and form colonies. These bees easily found in tropical and subtropical regions of South America, South Africa and Southeast Asia. Products of Trigon bee has higher acidity, moisture content but lower sugar compared than Apismellifera [3].

Honey contains proteins and amino acids, vitamins, enzymes, minerals and other micro components.[4].Honey and propolis have anti-inflammatory and anti-bacterial activities, its natural compounds is useful for diseases associated inflammatory process [5,6].Honey produce from Trigona Stingless bee has antimicrobial activity and effective against stafilokokkus aureus, pseudomonas and candida albicans [7]. Antioxidants activity of honey is correlated with polyphenols and vitamins content as Total Phenols, Flavonoids, vitamin C and vitamin E [8-11].

Evidence about the nutritional content of honey propolis Trigonahas an important role to be used as a basis for in vitro and in vivo research on health benefits. This study aimed to analyze the nutritional content and PH of honey Propolis Trigona from Masamba, Nort of Luwu district, South Sulawesi Province of Indonesia.

2. Material and Methods

2.1 Materials and Examination Method

Honey and Propolis Trigona are taken from Masamba, North of Luwu district, South Sulawesi Province of Indonesia. Food sources of Trigona bees are from nature such as Rosella flower, rambutan trees, chrysanthemums flower, coconut and palm trees planted around the barracks of bees.

Honey was deposited in a dark room for 72 hours to clean it from dirt and then put in the heating / drying oven to reduce the moisture content in honey. Propolis liquid is made by mixing 100 grams ofpropolis with 1000cc of water. Propolis then heated to a temperature of less than 80^0C and stirred until homogeneous, then the heat source is turned off. Homogeneous solution was cooled untill solidswax float on the surface, wax solids discharged until the remaining solution of propolis and water and then filtered. For Examination, honey propolis made by mixed 85% of honey and 15% of propolis.

Examination of total phenols and quercetin and PH were performed in Biofarmaka laboratory, Faculty of Pharmacy Hasanuddin University, Sample was 75 grams of honey mixed with 15 grams of Propolis Trigona.

Nutrient Content was tested at Center for Health Laboratory Makassar. Total phenol was determined by the Folin-Ciocalteu method and quercetin was determined by aluminum chloride method based procedures [12].Examination of carbohydrate and protein using titrimetric method, moisture level using gravimetric method. Examination of calcium, magnesium and sodium using atomization method. Examination of vitamin A, vitamin C and vitamin E using spectrophotometric method, all the methods in accordance with the Indonesian National Standard (SNI) established by the National Bureau of Standards Indonesia.

3. Result

Table 1: pH and Nutrient Content of Honey Propolis Trigona From Masamba, South Sulawesi

pH and Nutrient Content	Quantity
PH	4
Protein	0.43 %
Moisture Level	17.11%
Carbohydrate	21.94 %
Total Phenol	190.3 mg/100 g
Quercetin	17.28 mg/100 g
Vitamin A	4.49 ug/g
Vitamin C	302.26 ug/g
Vitamin E	59.36 ug/g
Calsium (Ca)	292.5 ppm
Magnesium (Mg)	261.5 ppm
Zink (Zn)	0.71 ppm

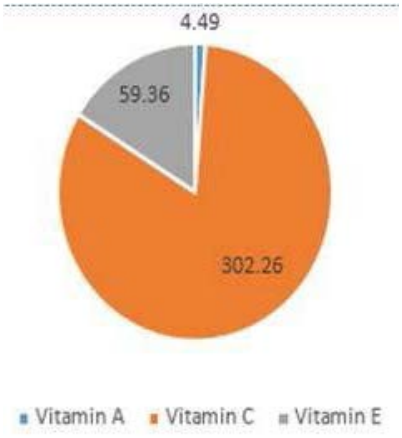

Figure1: Comparison of Vitamin A, vitamin C and Vitamin E in Honey Propolis Trigona From Masamba, South Sulawesi

Data from this study showed that the degree of acidity (PH) honey Propolis Trigona is 4, protein content 0,43% and moisture content 17,11%. Total phenol was 190.3 mg / 100 g and quercetin content was17,28 mg / 100 g (Table 1). While the content of vitamins A, C and E as shown in table 1 and figure 1 shows that vitamin C (302.26 ug / g) had higher levels compared to vitamin E (59,36 ug / g) and vitamin A (4,49 ug / g), vitamin A levels are the lowest level. Calsium (Ca) is higher (292.5 ppm) compared with Mn (261.5 ppm) and Zn (0.71 ppm).

4. Discussion

Phytochemical components and low pH has beneficial in preventing of microbial growth [13.Honey Propolis Trigona from Masamba has higher total phenol content compared with other honey, its comparison based on literature that have been published, including Tualang honey, Gelamhoney, Trigona Carbonaria honey from Australia [6,10,14]. Diet containing polyphenols including total phenols and quercetin, vitamin A and vitamin C could affect immune homeostasis by influencing Foxp3 Treg, a transcription factor of regulatory T cell [15-17]. PH and nutrient content of honey Propolis Trigona has potential benefits for prevention and treatment of disease.

Although still rare, but several studies have shown that propolis contains minerals such as magnesium, calcium, potassium and zinc. Mineral content of propolis is affected by seasonal variations [18,19]. Some studies had different result concerning the highest mineral content of honey, sometimes Calcium, potassium or Sodium becomes the highest mineral content of honey but heavy metals such as Zn always has low level [20,21].Honey given to postmenopausal mouse models showed improvements in trabecular bone structure and Utilization of propolis for the treatment of bone fractures showed good results for bone mineral density[22,23]**.**In the case of distraction osteogenesis (DO), treatment of propolis also accelerates bone formation and shorten the consolidation phase in the DO [24]**.**Honey and propolis has proved beneficial to problems related bones, it is expected further studies will study concerning honey propolis and it would be better than just honey or propolis alone.

5. Conclusion

Honey propolis has a low pH with high total phenol and quercetin content while vitamin vitamin C is the highest vitamin content compared vitamin A and E and for minerals, Calcium is the highest than magnesium and Zinc.

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Conflict of Interest

The authors declare that there is no conflict of interest for this paper.

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