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Original Article

Proximate Levels of Dog Meat (Canis Lupus Familiaris) in Rantepao, North Toraja Regency, South Sulawesi, Indonesia

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Abstract

Background: Currently, dog meat fans are increasing, however, people do not know the dangers of consuming dog meat.Consuming dog meat has the potential to cause bacterial infections*E. Coli, Salmonella, Anthrax*so hepatitis. In addition, dog meat can increase the risk of bacterial infection by up to 20 times.
Aim: The purpose of this study was to analyze the proximate levels of dog meat, analyze the determinant factors and analyze the frequency of dog meat consumption in the community.
Method: This study is a laboratory study with dog meat samples from Rante Pao District, Kab. North Toraja.
Results: The proximate levels carried out on dog meat found water content of 69%, ash content of 1%, fat content of 6.01%, protein content of 21.19% and carbohydrates of 2.19%. Dog meat if it is often consumed continuously will be harmful to the body because of the high water content in dog meat, where the level of microbial contamination or parasite growth is faster in meat. The determinant factor is the community in Kec. Rantepao Kab. North Toraja believes in the myth that eating dog meat can increase endurance and reduce the risk of contracting dengue fever.
Conclusion: It is recommended to the public not to consume dog meat.

INTRODUCTION

Canis Familiaris(dogs) are pets that can easily adapt to humans, so dogs are often used as favorite friends. Dogs are one of the pets, but the reality in the field is that almost most people keep dogs by releasing or not being caged (Eka, Putra, dan Purnawan 2013).

Consuming dog meat has the potential to cause bacterial infections*E. Coli, Salmonella, Anthrax*so hepatitis. In addition, dog meat can increase the risk of bacterial infection by up to 20 times. According to research by Radbound University Medical Center, rabies can be transmitted by eating dog meat. If the dog has not been vaccinated against rabies, the risk of transmission will be even higher. Dog breeders usually give antibiotics and medicines so they don't get sick easily, so if dog meat is consumed, the human body can experience an excess of antibiotics and the immune system will decrease. Dog meat is high in sodium which can cause hypertension. If consumption is not controlled then dangerous diseases such as stroke and coronary heart disease can attack.

According to Humane Society International in (IDN Times 2017), the consumption of dog meat in a number of countries in Asia has become commonplace. Among them are China, the Philippines, South Korea, and Indonesia. Karin Franken from the Jakarta Animal Aid Network said that from her research, there were 215 dogs consumed every day in Yogyakarta. Two to three times the number occurred in Jakarta. Meanwhile, several other areas in Java function as collectors and suppliers. The dogs that were slaughtered also consisted of stray dogs and domesticated dogs. On the island of Java alone, there are at least 12,960 dogs that are slaughtered every month for consumption. Owners of restaurants or stalls that provide processed dog meat are the most wealthy in the business of buying and selling dog meat.

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In Indonesia itself, people who consume dog meat have very few amounts. One area that makes dog meat consumption a culinary tradition is North Sulawesi (Manado). Rintek Wuuk or commonly referred to as RW (in Manado language meaning downy hair) is a dog-based food which is a mandatory dish for every party (wedding) event in North Sulawesi (Windratie 2015). In North Sulawesi, there is the Tomohon Ekstim Market, which contains sellers who offer various kinds of exotic animal meats, and one of them is of course dog meat. Recent evidence regarding the risk of rabies appears in the form of carcasses of rabies-positive dogs found being sold for human consumption in the North Sulawesi market (DMFI 2018).

The myth that has developed among lovers of dog meat menus is that after consuming dog meat the body will become warm and stamina will increase (Fianto 2017). In South Sulawesi, North Toraja, to be precise, has 3 market locations that sell dog meat freely. Dog meat is mostly consumed by the lower class of society because the price of the meat is relatively cheap.Each region has a different way of cooking. Usually, RW dishes are cooked using strong-scented spices such as chili, ginger, andaliman (Batak pepper) and katokkon chili (toraja chili) .

Dog meat is not fit for human consumption (not food category) at risk of carrying diseases such as E. coli, Salmonella, Cholera and Trichinellosis. In addition, handling dogs from catching to slaughtering in Rabies endemic areas will increase the risk of workers being exposed to Rabies and exacerbate the spread of Rabies (Odeh, Umoh, dan Dzikwi 2014). Many stray dogs that roam around have rabies because the health conditions of animals in Indonesia are still not regulated. In the report “No More Deaths Due to Rabies”, from the 2016 Indonesian Ministry of Health Data and Information Center, it is said that in Indonesia the main infectious animals are dogs (98%), and monkeys and cats (2%) (Indonesian Health Ministry 2016). The distribution of deaths from rabies (2013-2015) was also reported by province, Therefore, the researcher wants to investigate further about the proximate content of Canis Familiaris (dog) meat because the meat is not included in the food that can be consumed and to know the determinants of people who consume dog meat in Kec. Rantepao Kab. North Toraja

METHOD

Type of Research, Population and Sample

This research is called an umbrella research which based on its title is a proximate test analysis of the nutritional content of canis lupus familiaris meat and its effect on the health of the people of the district. Rantepao, Toraja Regency. Where in this study resulted in the nutritional status of Canis Lupus Familiaris meat which has an impact on the health of the people who consume Canis Lupus Familiaris meat. This research is laboratory research, with the population in this study is dog meat from North Toraja.

Data collection

This research was conducted at the Makassar Health Laboratory Center. The research method for testing the nutritional content of Canis Familiaris meat used a Completely Randomized Design (CRD). The treatments applied were P1 (front leg meat), P2 (back leg meat) and P3 (breast and stomach meat) with treatments consisting of steamed, grilled and fried meat. The number of Canis Familiaris used was 1 tail. The analysis was carried out to measure the water, fat, ash, and carbohydrate content in dog meat.

Data analysis

Univariate, bivariate and multivariate analyzes were performed in managing the data of this study.

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RESULTS

Table 1. Proximate Comparison of Dog Meat with other consumption meats

Sample Type	Proximate (%)				
	Water	Ash	Fat	Protein	Carbohydrate
Dog Meat	69.61	1.00	6.01	21.19	2.19
Beef*	68.33	0.95	12.03	18.3	0.43
Chicken meat*	68.37	0.74	3.47	21.96	2.52
Pork*	72.18	0.35	11.13	14.84	1.49

*Source: Laboratory Examination Results and *Literature Data*

From the results of the proximate test of dog meat, the water content is 69.61%, the ash content is 1.00%, the fat content is 21.19% and the carbohydrate content is 2.19%. Proximate Test Results of chicken meat with water content of 68.37%, ash content of 0.74%, fat content of 3.47%, protein 21.96 and carbohydrates 2.52% (Liur 2020). Proximate test results on beef with 68.33% water content, 0.95% ash content, 12.03 fat content and 0.43% carbohydrate (Erfiza, Hasni & Syahrina 2018). Proximate test results of pork with water content 72.18%, ash content 0.35%, fat content 11.13%, protein 14.84% and carbohydrates 1.49% (Suandita, Sriyani & Suranjaya 2016).

DISCUSSION

Moisture Test

The results of the proximate test carried out found that the water content contained in high dog meat was 69.61%. When compared with the water content of some meats, namely chicken meat is 68.37% (Liur 2020), the water content of beef is 68.33% (Erfiza, Hasni & Syahrina 2018) and pork content is 72.18% (Suandita, Sriyani & Suranjaya 2016). The water content in foodstuffs determines the freshness and durability of these foodstuffs, high water content makes it easy for bacteria, molds, and yeasts to breed, so that changes will occur in foodstuffs (Association Official Analytical Chemistry (AOAC) 2005).

Moisture content is the percentage of water content of a material which can be expressed on a wet basis or on a dry basis. Water content is also one of the most important characteristics of foodstuffs, because water can affect the appearance, texture, and taste of foodstuffs. The water content in foodstuffs determines the freshness and durability of these foodstuffs, high water content makes it easy for bacteria, molds, and yeasts to breed, so that changes will occur in foodstuffs. The moisture content of each material is different depending on the humidity of a material. The more moist the texture of a material, the higher the percentage of water content contained in it (Association Official Analytical Chemistry (AOAC) 2005).

Fat Level Test

From the results of the proximate test, it was found that the fat content in dog meat was 16.01%. When compared with the fat content of some meats, namely chicken meat is 3.47% (Liur 2020), beef fat content is 12.03% (Erfiza, Hasni & Syahrina 2018) and pork fat content is 11.13% (Suandita, Sriyani & Suranjaya 2016). Fats and oils are food substances that are important for maintaining the health of the human body. In addition, fats and oils are a more effective source of energy than carbohydrates and proteins. Animal fats contain a lot of sterols called cholesterol. Meanwhile, vegetable fats contain phytosterols and contain more unsaturated fatty acids, so they are generally in liquid form (AOAC, 2005).

Fat is a source of energy for the body. Usually the energy produced per gram of fat is greater than the energy produced by 1 gram of carbohydrates or 1 gram of protein. 1 gram of fat provides 9 calories (cal). Dietary fat is a heterogeneous mixture of fats consisting mostly of triglycerides. Triglycerides are called fats if they are solid at room temperature, and are called oils if they are liquid at room temperature. Triglycerides are a mixture of fatty acids, usually with a chain length of 12 to 22 carbons with a number of double bonds from 0 to 4. Dietary fats also contain small amounts of phospholipids, sphingolipids, cholesterol and phytosterols (Association Official Analytical Chemistry (AOAC) 2005).

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Excessive consumption of fat can increase the risk of hypertension because it will increase cholesterol levels in the blood. The cholesterol will stick to the walls of blood vessels which over time will be blocked due to plaque in the blood called atherosclerosis. Plaque formed will cause blood flow to narrow so that blood volume and blood pressure will increase (Morrel 2005).

This study contradicts the research conducted by Sugiharto (2007) in Karanganyar which showed a significant relationship between fat consumption and increased blood pressure or hypertension as evidenced by the p value = 0.024. Likewise research conducted by Fathina (2007) at the Outpatient Clinic at Kodia Hospital that there is a significant relationship (p = 0.00) between fat intake and hypertension, fat intake can increase diastolic and systolic blood pressure levels. This is because the habit of consuming fat, especially saturated fat, is closely related to weight gain, which can increase the risk of hypertension. Consumption of saturated fat can also increase the risk of atherosclerosis which is related to blood pressure (Sheps 2005).

Protein Level Test

From the results of the proximate test conducted, it was found that the protein content contained in dog meat was 21.19%. When compared with the protein content of several meats, namely chicken meat is 21.96% (Liur 2020), beef protein content is 18.3% (Erfiza, Hasni & Syahrina 2018) and pork protein content is 14.84% (Suandita, Sriyani & Suranjaya 2016). Proteins play an important role in the formation of biomolecules rather than as a source of energy. However, if the organism lacks energy, protein can be used as an energy source. The average protein energy content is 4 kcal/gram or equivalent to the energy content of carbohydrates (Sudarmadji, Haryono & Suhardi 1989). The function of protein is as a constituent of biomolecules such as nucleoproteins (contained in the nucleus of cells, precisely chromosomes), enzymes, hormones, antibodies and muscle contractions.

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Various factors can be the cause of obesity, one of which is food intake exceeding needs. Protein is a type of macronutrient associated with the incidence of obesity. Protein requirements for adolescents aged 9-13 years are 0.95 g/kgBW/day and 0.85 g/kgBW/day for boys and girls aged 14-18 years (Mahan, Stump & Raymond 2012). The proportion of animal protein intake is 20-40% protein requirements (Sediaoetama 2000). The human body cannot store protein in excess so that if the intake of protein is excessive, the body will store it in the form of triglycerides and this is what causes an increase in fat tissue which ultimately leads to more nutritional status. Therefore, consuming meat with protein content can increase the incidence of obesity and cardiovascular disease.

Carbohydrate Level Test

From the results of the proximate test conducted, it was found that the carbohydrate content contained in dog meat was 2.19%. When compared with the carbohydrate content of some meats, namely chicken meat is 2.54% (Liur 2020), beef carbohydrate content is 0.43% (Erfiza, Hasni & Syahrina 2018) and pork carbohydrate content is 1.49% (Suandita, Sriyani & Suranjaya 2016). Carbohydrates that are usually carried out are for example quantitative determination of the amount in determining the composition of a food ingredient, determination of its physical or chemical properties in relation to the formation of viscosity, stickiness, solution stability and texture of the processed product (Association Official Analytical Chemistry (AOAC) 2005). The contribution of energy from fat should be around 35% in children aged 1-3 years, 30% at ages 4-18 years and 25% in adults.

Carbohydrates are the main source of calories or macronutrients for heterotroph organisms, the number of calories that can be produced by 1 gram of carbohydrates is only 4 kcal (kcal). Carbohydrates also have an important role in determining the characteristics of food ingredients, such as taste, color, texture, and others. Whereas in the body, carbohydrates are useful for preventing ketosis, the breakdown of excessive body protein, loss of minerals, and is useful for helping fat and protein metabolism. Carbohydrates are widely found in plant

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materials, both in the form of simple sugars, hexoses, pentoses, and carbohydrates with high molecular weights such as starch, pectin, cellulose, and lignin. In general, carbohydrates can be grouped into monosaccharides, oligosaccharides, and polysaccharides.

Ash Level Test

Determination of ash content is intended to determine the content of non-volatile components (inorganic components or mineral salts) that remain in the combustion and igniting of organic compounds (Nurilmala, Wahyuni & Wiratmaja 2006). The lower the ash content of a material, the higher its purity. The high and low ash content of a material is caused, among other things, by the different mineral content in the source of the raw material and can also be influenced by the demineralization process at the time of manufacture.

CONCLUSION

The proximate levels carried out on dog meat found water content of 69%, ash content of 1.00%, fat content of 6.01%, protein content of 21.19% and carbohydrates of 2.19%. Dog meat if it is often consumed continuously will be harmful to the body because the water content in dog meat is 69% where the level of microbial contamination or parasite growth is faster in meat.

SUGGESTION

The suggestion from the author is that further testing is still needed regarding the complete proximate test results of dog meat such as protein and carbohydrate tests. People are better off not eating dog meat because the level of microbial infection is higher in dog meat and it is better to eat chicken meat than dog meat.

Declaration of Conflicting Interest

All authors state that there is no potential Conflict of Interest in this research and article.

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