

RESEARCH ARTICLE

BENEFITS OF HALOGEN NUTRITION FOR HUMAN HEALTH IN PAPUA PROVINCE INDONESIA

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Manuscript Info

Abstract

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*Key words:-*Halogen Nutrient, Health Of Forest Animals And Papuans **Background:** chemical elements class VIIA, was the most reactive element and the halogen element is not found free in nature. Halogen is derived from the word halo genes, which means salt forming. The halogen element is a non-metallic element consisting of Flourine (F_2), Chlorine (Cl_2), Bromine (Br_2), Iodine (I_2), and Astatine (At_2). Halogens are very important in the field of nutrition, althougt it is needed in small amounts. One very important element to improve the nutritional status of pregnant women, breastfeeding mothers, baby, and toddlers namely the element iodine. But other elements such as fluorine, chlorine, bromine, and astatin, also needed by the body to improve the health status of the mother, children, and other age groups. The purpose of the study was know the history of the benefits of halogen nutrients for human and animal health in Papua Province of Indonesia.

Methods: Qualitative research with phenomonology approach. The approach used in research is cultural, to describe the utilization of halogen nutrients, by the peoples of Papuan in Papua Province. Data collection uses in-depth interviews. Research Samples ware Elderly aged ≥ 60 years, who know the benefits of halogen nutrients. Research location was Jayapura and Jayawijaya Regencies in Papua Province Indonesia.

Results: The results of the study proved that halogen nutrients are formed from coal mining materials. The halogen nutrient ware very necessary for forest animals to improved growth, development, and health status. In the past before there were Netherlands and Indonesian governments in Papua Province. Papuans who live in the mountains and valleys, had consumed halogen nutrients to improved nutritional status, growth and development, immune system to infectious diseases, and health status. The halogen nutrient is usually consumed by native Papuans and forest animals, whose lives ware far from edge of the sea, usually live in mountainous areas and valleys. The halogen nutrient becomes an essential nutrient that was needed by forest animals and humans, before they knew iodized salt in Papua Province Indonesia.

Conclusion: Coal mining is the main source of halogen nutrients. The halogen nutrient is an essential nutrient needed by forest animals and humans to improved : nutritional status, growth and development, body immunity, prevention of infectious diseases, and health status.

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Introduction:-

The halogen nutrient in the Periodic system is group VII A. halogen nutrients consist of $Fluorine(F_2)$, $Chlorine(Cl_2)$, Bromine(Br₂), $Iodine(I_2)$, and $Astatin(At_2)$. The halogen nutrient has never been found free in nature, because the reactivity is very high[1]. Halogen nutrients are only found in the form of anions or salts and minerals[2].

Halogen comes from two sentences, which means salt, and genes means maker/creator. Definition halogen nutrients are living substances Fluor, Clor, Brom, Iodine and Astatin that the body needs to improved it's nutritional status[1]. Nutrition Adequacy Rate (RDA) for human health(pregnant women, breastfeeding mothers, infants, toddlers, school children, teenagers, students, athletes, the elderly and others) very necessary from nutritious food ingredients[3]. The halogen nutrient is an essential compound that is very important to increase endurance, prevention of infectious diseases, improved nutritional status, improved work productivity, and improved the degree of public health[2].

Halogen nutrient (halogen compound) in the field of nutrition is better known as essential nutrients, for growth and development. One of the children's health problems is cretin related to the consumption of foods that deficient halogen nutrients. Moreover, deficient of halogen nutrients associated with stunting children. Where in the daily food contains deficient iodine[4].

Culture has a special function in society to obtain nutritious food ingredients, moreover that culture is closely related to the health and sick status of the Papuan peoples. Knowledge, attitudes and actions Papuan peoples consumtion certain types of foods, for nutritional needs and protect themselves against certain types of diseases. Moreover avoid certain types of foods, to stay healthy and not sick[5].

Cultural knowledge in the socio-cultural relations of the peoples in Papua Province greatly affect the degree of public health. This relates to how to provide food for the family, and ways to prevent infectious diseases in the culture of the people of Papua Province[6]. Changes to the nutritional status of the community, was one of the important behavioral changes, in using food according to the social view of the community. Growth and development of nutritional status in pregnant women, breastfeeding mothers, and toddlers very related to the community's views provide nutritious food for their families[7]

The people of Papua have a variety of rich cultural and natural resources. There are many advantages to local food ingredients, which has not been processed and developed into food and beverage ingredients that are beneficial for the health of pregnant women, infants, toddlers and school children in Papua Province. Papua's local food is a very important source of biodiversity, so that it can be developed into health food and drinks with high nutritional value in Papua Province.

Papua's local food is managed and developed with technology, it can be a superior product to improve the degree of public health. Thus this study, examines the history of the use of halogen nutrients that have been carried out by the people of Papua in the past. This is an initial description, for the development of halogen nutrients in Papua Province.

Methods:-

Qualitative research with phenomonology approach. The approach used in research is cultural to described the use of halogen nutrients by the peoples Papuan in Papua Province. Data collection uses in-depth interviews. The research sample is the elderly aged ≥ 60 years who know the utilization of halogen nutrients. Research locations are Jayapura and Jayawijaya Regencies[8].

This research method is a problem-solving procedure using past data, or existing relics, to understand a situation that took place in the past. Furthermore, past events can be an important part of the future, to utilize halogen nutrients to be a superior health drink in Papua Province Indonesia. Especially the most important group to consume halogen nutrients is pregnant women, breastfeeding mothers, infants, toddlers, and the elderly [9].

Results:-

History of the formation of halogen nutrients in Papua Province:

Formation of halogen nutrients (Halogen Compounds), had a cycle from one part to another, and the process occurs naturally, without human assistance. Everything in the universe changes, starting from matter, compounds, and elements. Material is a large part of the compounds that had formed living things(plants, animals and humans). Compounds are part of the elements that form a material(plants, animals and humans). While the elements are the smallest parts and cannot be divided into simpler parts. Therefore the element is the basis of life (zarrah element) of all living things (plants, animals and humans) on earth. Moreover, the elements are the atoms that power the universe.

All material that makes up the body (plants, animals and humans) after death, will be returned to nature and broken down into other material parts. The plants died, all material in plants will be decomposed by microorganisms in the soil. It takes hundreds to thousands of years to become fossils and mines. While the material making up the human body and animals after death, have the same way namely described by organisms in the soil into fossils and mines. Thus plants, animals and humans need simple elements that are utilized to be a greater part of life namely compounds and matter. Moreover that after plants, animals and humans died, all matter and compounds will be broken down into simpler elements for other parts. Can see the concept of Semuel Piter Irab and UNICEF below.



Chart:- Formation of Halogen Nutrition (Concept: Semuel Piter Irab, 2020 and UNICEF, 1990) Source: a. Semuel Piter Irab, 2020 (1,2,3,4,6,7,8,9,10,11,12,14 and 16) b. UNICEF, 1990 (5,13 and 15)

The results of the formation of mines and fossils are sourced from plants, animals and humans. It was buried in the soil hundreds to thousands of years ago. Nowadays mining products are very important for the needs of human life. The mine contains zarrah elements, which provide treatment, prevent disease, improved growth and development, and improved human intelligence. Thus, mining materials become a superior product in the field of industrial technology, health, and medicine. Moreover is very important for transportation fuels like motorbikes, cars, planes, ships, spaceships, and materials for Electric Power Generation.

Coal is a mining material that has enormous benefits for the needs of human life, at present the need for coal resources is increasing in the world. Even the source of coal is a very important human need every day. The process of coal formation, occurs through the decay of various types of plants, various types of animals, and humans. So that it becomes a fossil and a mining product, taking hundreds to thousands of years. The coals provides good needs for humans, and becomes an important part of human life.

Halogen compounds or in the field of nutrition are called halogen nutrients. Giving names of halogen nutrients, because halogen compounds contain zarrah (life) elements. Halogen compounds provide strength, health, growth and development, prevent infectious diseases, prolong life in humans and animals. Humans and animals that normally consume halogen compounds or halogen nutrients, have a longer life expectancy. While humans and animals that consumed deficiency halogen nutrients (halogen compounds) have a short life expectancy. The impact caused by sickness, stunted growth and development, infertile or do not have offspring, low productivity, short life expectancy, lack of enthusiasm, low IQ, and inhibited metabolism.

Halogen compound is one part of essential nutrients for humans and animals derived from coal mining. There are two forms of halogen (halogen compounds) in nature namely solid form (coal) and liquid form (halogen compound). The first is the solid form called coal. This coal cannot be eaten by humans and animals, if humans and animals eat coal, will experience health problems (sick or dead). The second is called by the name halogen compounds namely water that comes out of the ground and tastes salty. Salty water usually comes out of land containing mines, such as coal. This saltwater provides strength, and health, and extends the life span of humans and animals. Therefore, humans and animals don't eat coal, but consumed or drink halogen nutrients (halogen compounds). So the halogen compound greatly determines the nutritional status, health status to humans and animals. The benefits of halogen compounds are very important for living things.

Halogen compounds are nutrients that are unstable in nature, so it is very difficult to find it's in one piece, thus humans find it difficult. The halogen nutrient (halogen compound) is composed of the following elements: Fluorine (F_2) , Clorine (Cl_2) , Bromine (Br_2) , Iodine (I_2) , and Astatine (At_2) . Most humans and animals are deficient in halogen nutrients (halogen compounds), because these elements are unstable, and easily disappear. So that humans and animals are difficult to obtain and consume.

Therefore halogen nutrients are very sensitive to the temperature of the surrounding air. The air temperature greatly affects the halogen nutrients (halogen compounds) namely sunlight. Therefore the chemists call that halogen compounds are very easily broken down (ionized) into simpler elements, and disappears when exposed to sunlight in the morning and afternoon. Halogen compounds quickly evaporate from the earth's surface. So humans and animals drink water, it is not enough to contain halogen nutrients. Thus many humans and animals are less halogen nutrients (halogen nutrient deficiency).

The halogen nutrient has evaporated from the surface of the water, rising into the earth's atmosphere during the daytime. Caused by the difference in air pressure during the daytime, he surface of the earth is very hot, so that the halogen nutrient cannot survive, on the leaves, rocks, soil surface and water surface(rivers, lakes, ponds and seas). The halogen nutrient that rises to the earth's atmosphere will stay above, because the upper part of the atmosphere is cold. At night, the earth's humid temperature changes from heat to cold, and the sun is not there, then the halogen nutrients fall to the surface of the earth, in the form of water droplets or mist droplets. Thus droplets of water or mist dripping on the leaves of trees, then absorbed to photograph plant synthesis. The halogen nutrient from the atmosphere that falls on the surface of the water(river, lakes, ponds, seas), rocks, and soil. Exposed to sunlight in the morning and afternoon, rises back into the atmosphere.

Moreover halogen nutrients in the human body, animals and plants will disappear after death. will be described again by oranganism in the ground, into simple elements. Then form coal, after that it forms a halogen compound, which is needed by humans and animals to improved their health status.

History of the Benefits Halogen Nutrition for Animals Health in Papua Province:

Papua is one of the easternmost provinces in Indonesia. Papua Province has a rich source of flora and fauna. Moreover, Papua Province has a source of mining wealth that has not been well utilized by the government. Many mining areas contain natural elements that animals need for food, but also as drinking water for their survival.

The halogen nutrient is one of the natural compounds found in mining areas in Papua Province. The halogen nutrient becomes an important part to improve the health status of forest animals in Papua Province. All forest animals, miss halogen nutrition, because it is one of the essential nutrients for forest animals. The halogen nutrient is not made by human hands, but is formed naturally.

drunk it.

Various types of forest animals which usually consume halogen nutrients namaly wild boar, tree kangaroo, land kangaroo, species of birds, mice, cassowaries, snakes, ants, butterflies, maleo, deer, and various other animals. Various types of forest animals eat plants, or eat other animals, it's will come and drunk halogen nutrients. Because halogen in the form of salt water comes out of the soil, giving a very good metabolic reaction in the bodies of forest animals. All types of forest animals miss for halogen nutrients, as salt water that provides health.Therefore,halogen nutrients are strong oxidizing agents in metabolic reactions in animals and humans.

Each type of forest animal that always consumes or drinks halogen nutrients has a better health status. While forest animals that do not drink halogen compounds have poor health status. Morbidity and mortality rates are greater in forest animals that do not consumed halogen nutrients, while morbidity and mortality rates are lower in forest animals that consumed halogen nutrients. Therefore heredity better for forest animals that consume halogen nutrients, while the heredity are not good in forest animals that do not consumed halogen nutrients. Therefore heredity better for forest animals that consume halogen nutrients, while the heredity are not good in forest animals that do not consumed halogen nutrients (infertile). Forest animals, basically have a sense of taste that is sharper than humans. Every forest animal has an organoleptic to determine whether a type of food or water can be consumed or not. If the food or water is endangering the forest animals, it's will eat or drunk. If food or water does not endanger the animals, it's will eat or

Organoleptic assessment that humans normally do on food or drinks. But various types of forest animals also have organoleptics to judge something food or drink, fit for consumption or not. One of the important aspects of nutrition is the organoleptic assessment of forest animals on halogen nutrients. If the halogen nutrient tastes, smells, forms, normal colors, the forest animals will drink it. But if it tastes different: it's too salty, has a high gas counterpart (high gas pressure damages the breathing of animals or animals feel dizzy when it's smell halogen gas), or there's hot water coming out, then the forest animals don't drink it.

The halogen nutrient in its utilization, need to be careful. Because when there is a very high gas pressure difference in the mine in the ground, then the halogen nutrients that come out to the surface of the earth experience a very high gas right, can endanger the health of forest animals and also in humans. The difference in the pressure of the halogen nutrient gas which is very high provides an assessment that it should not be consumed by animals or humans. Because it is dangerous for health.

History of the Benefits Halogen Nutrition for Human Health in Papua Province:

The history of the consumption of halogen nutrients has been carried out by the ancestors of indigenous Papuans since the same before, before the Government of the Netherlands and Indonesia. In ancient times, the ancestors of indigenous Papuans, who were in the mountains and valleys, were in dire need of halogen nutrients. Their assumption is that the halogen nutrient is a basic need and must always be available for each time you cook food. Therefore halogen nutrients become an important part in the daily life of the ancestors of indigenous Papuans.

Halogen nutrients can be obtained in various forms, to improve the nutritional status and human health in Papua Province. Most indigenous Papuan ancestors used it in cooking food, such as cooking vegetables. Adding halogen nutrients to cooked vegetables, it gives a better flavor to the cuisine. Therefore such as cucumber, string beans, and other vegetables soaked in halogen nutrient water, after which they are eaten raw. This is one of the good habits of the ancestors of indigenous Papuans, consuming raw food. Thus the mineral nutrients and vitamins are not damaged.

Adding flavor to staples such as bananas, sweet potatoes, taro, and sago. Usually the food is sprinkled with halogen nutrient water. Some are sprinkled with halogen nutrient water after the staples are cooked, and some are sprinkled with halogen compounds before the staples are cooked. It all depends on the way each Papuan ancestor used halogen nutrients in cooking food. After that they eat together with the family.

Ancestors of indigenous Papuans in the valley area, usually keep halogen compounds in bamboo. Then put it in a cool place. This purpose is done to avoid excessive evaporation, and foreign feelings do not disappear. This simple storage method, can make halogen nutrients, durable in the storage process.

Halogen nutrients are usually consumed by ancestors of indigenous Papuans living far from the sea, such as in the mountains and valleys. The ancestors of indigenous Papuans, consuming halogen nutrients for their daily needs. Halogen nutrient intake into the body, through drinking water, makes the metabolic processes take place very well in

the body. This can occur in animals and humans. The halogen nutrient is a strong oxidizing agent in metabolic reactions.

Consumption of halogen nutrients makes a difference in better nutrition. Thus pregnant women, breastfeeding mothers, infants, toddlers, adults, and the elderly do not experience a lack of halogen nutrients in Papua Province. This proves that those who consume halogen nutrients have better nutritional status. While the ancestors of indigenous Papuans who consumed deficiency halogen nutrients have low nutritional status. Halogen nutrients have an important role in food flavor. Therefore, certain fruits and vegetables are soaked in halogen compounds, then eaten to improve the nutritional status of family members.

The halogen nutrients are rich in the elements Fluorine (F_2), Clorine (Cl_2), Bromine (Br_2), Iodine (I_2), and Astatine (At_2). The elements of these halogen compounds are important nutrients in improving the nutritional status of the ancestors of indigenous Papuans in Papua Province. So that the ancestors of indigenous Papuans have a long life expectancy. In addition, the morbidity, maternal and child mortality rates are low.

Discussion:-

The element Fluorine (F_2) is an important part of humans. But it is needed in a limited amount in the human body. Other than that amount of too much fluorine in the body can interfere with health or poisoning such as yellowing of the teeth, heartburn, diarrhea, pain in the chest area, itching, and vomiting[10]. Source of fluorine comes from soil, water, plants and animals. Fluorine is one of the essential minerals that the body needs in the formation of bones and teeth. Fluorine deficiency occurs in drinking water, can cause damage to teeth and bone loss in the elderly. Consumption of fluorine which is considered safe for humans 1.5-4.0 mg / day. Fluorodization is usually done for drinking water, so that people who consume drinking water do not lack the fluorine element. Besides the replenishment of fluoride to toothpaste, it is also very important to protect the public from dental caries [2].

In the field of health the consumption of the element Clorine (Cl_2) is limited, so as not to cause interference with human health. Clorine (Cl_2) is the main anion of extracellular fluid. human body weight composed of chlorine by 0.15%. The highest concentrations of Clorine (Cl_2) are in the cerebrospinal fluid (brain and spinal cord), stomach, and pancreas[10]. Clor's rate of achievement in humans, is not specifically determined. However, the minimum daily Clorine requirement is estimated at 750 mg. In food, Clorine is in the form of table salt (Na-Cl) and other salts. Most of Clorine is derived from vegetable foods and fruits that have been added to table salt[11].

The element Bromine (Br2) is a reddish brown liquid, is rather volatile at room temperature, the vapor is red, smells bad and can cause irritating effects on the eyes and throat. Bromine dissolves easily in water and forms a red solution, is less active than chlorine but is more reactive than iodine[12]. Bromine is a halogen element that is liquid at room temperature, so it is known as bromine water. Some physical properties of bromine are boiling point 59.5%, freezing point -7.25%, density 3.12 gram / cm (200C). Bromine is soluble in water and some organic solvents such as alkanes, alcohols, ether, and carbon disulfide. But in the field of health, bromine is an element needed to increase endurance[13].

Iodine (I2) functions for thyroid hormone synthesis which takes place in the thyroid gland. Thyroid hormone is very important in regulating the body's metabolism[14]. The function of thyroid hormone is to increase carbohydrate and fat metabolism, increase blood flow to the heart, increases gastrointestinal motility and has a stimulating effect on improving the work of the central nervous system[15]. The iodine content in plants depends on the soil where the plant is planted. The higher the level of iodine in the soil, the higher the iodine found in the plant[16].

Iodine is in the body, very little amount of approximately 0.00004% of body weight or 15-23 mg. About 75% of the iodine in the thyroid gland is used to synthesize the hormones thyroxine, tetraiodotironin (T4), and triiodotironin (T3) [10]. These hormones are needed for normal growth, physical and mental development of animals and humans. The remaining iodine is in other tissues, especially in the salivary glands, breast, stomach, and kidney. In blood iodine is in the form of free iodine or bound to Protein-Bound Iodine (PBI)[17].

Astatin (At2) is isotopes that are less stable, making it difficult to use in daily life, because it has a very short halflife. The specific dangers of astatin are unknown, because they have very few elements in nature. But Astatin generally has the same dangerous properties with other radioactive elements. Astatin is a chemical element in periodic tebel that has the symbol At and atomic number 85. The name of this element comes from the Greek (Astatos) which means unstable. This element belongs to the halogen group and is a radioactive element formed naturally through the decay of uranium -235 and uranium-238[1].

One of the characteristics of Astatin is that it is similar to iodine solution, so it can be used to reduce the thyroid gland. Astatin has about 30 isotopes, including Astatin (At218 found in the mineral uranium), Astatin (At215 and At219, found in actinium mixtures). The natural astatin has the longest lung time is At219 with 56 seconds. Whereas At213 is astatin which has the shortest lung time of 125nanoseconds = 1.25e-7 seconds or 2.0833e-9 minutes[4].

Halogen nutrients in the Periodic system are in group VII A. Halogen nutrients consist of Fluorine, Chlorine, Bromine, Iodine, and Astatin. The halogen nutrient has never been found free in nature because of its very high reactivity. Halogen nutrients are only found in the form of anions or salts and minerals[18].

Symptoms of children under halogen nutrients, such as enlargement of the thyroid gland, the child looks lethargic, slow movements, low IQ in learning at school. Halogen nutrient deficiency in pregnant women can disrupt the growth and development of the fetus in the womb, which causes babies to be born with a low weight[19]. This period is called the Window of Opportunity, which is the golden period in growth. At this critical time, there is a lot of pain and death in childrens[20]. Damage in this period is irreversible meaning that the child's health status cannot be repaired in the next phase of life, after the child becomes an adult[21].

Growth is a change from increasing a person's body size from small to mature. like cells, tissues, muscles, and bones[22]. While development is a change from the increase in cognitive abilities related to the intelligence level of infants, toddlers, school children and adults[23].

The situation of pregnant women, nursing mothers, children under five, adults, and the elderly in the community is closely related to consumption of nutritious food[24]. Nutritional food is all food containing living substances needed by the human body, The goal is growth, replacing the tissue of cells that have been damaged, providing endurance or immunity, and preventing disease[25].

Health is a primary human need, all humans need good health to life. A healthy body requires health efforts to be free from infectious diseases. But a healthy body can be maintained through food and drinks that contain enough nutrients[26].

Public health problems are very complex, interrelated with other problems outside the health field[27]. Solving public health problems, increasing the degree of public health, is greatly influenced by the behavior of the community it self. Such as people's behavior to provide nutritious food to their children. Health behavior is a person's response to a stimulus related to illness and disease[28].

Increased life expectancy, decreased infant, mother and child mortality rates, the decline in morbidity and disability rates as well as increasing the nutritional status of the community, are important factors of achieving the degree of public health[29]. In the assessment of nutritional status, two main factors that influence the degree of public health are nutrient intake and infectious diseases[30].

Conclusions:-

History of halogen nutrient formation through natural processes of dead plants, animals and humans. Decomposed by microorganisms in the soil, and takes hundreds to thousands of years to form a mine. Coal mining products are the main halogen nutrients (halogen compounds) needed by humans and animals to life.

The halogen nutrient is one of the natural compounds found in mining areas in Papua Province. The halogen nutrient becomes an important part to improve the health status of forest animals in Papua Province. All forest animals, miss halogen nutrition, because it is one of the essential nutrients for forest animals. Thus the halogen nutrients needed by forest animals for growth and development.

The history of the consumption of halogen nutrients has been carried out by the ancestors of indigenous Papuans since ancient times, before there was the Government of the Netherlands and Indonesia. The ancestors of indigenous Papuans, who are in the mountains and valleys, cook food using halogen nutrients. then eaten together to improve the nutritional status of the family.

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