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Analysis of Vitamin Content in Tropical Fruits

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ABSTRACT

Fruits are pointed out as natural sources of antioxidants, playing protective roles against aging, and chronic and degenerative pathologies. In this review it is shown that virtually unknown edible tropical fruits present significantly higher antioxidant activity when compared to temperate fruits considered to be good sources of antioxidantsThe tropical fruits, namely, Psidium Guajava L, Mangifera Indica L, and Carica Papaya L, are tropical fruits that have many benefits for the human body. They are rich in vitamin C, with three times the amount found in oranges, ten times the quantity found in papaya, and thirty times that found in bananas. Papaya is one of the fruit commodities that can be used almost as much. Crystal guava is a tropical fruit that is known to contain a large amount of vitamin A, and can be consumed regularly as a good antioxidant. It has various health benefits, such as antioxidant properties, improving digestive health, helping to lose weight, relieving flu symptoms, maintaining eye health, and nourishing the skin. It is also known that mango is an important source of micronutrients, vitamins, and other phytochemicals. Mango is called mango plants originate from India. The fruit is rich in vitamins A, C, D, and E, and it is also rich in antioxidants. The content of vitamin C is also high. The antioxidant activity test of ethanolic extract from solanum family leaves using methanol is used to reduce inflammation and protect body cells from the effects of free radicals that have the potential to cause various diseases. Further research is needed to better know the content of vitamins and pharmaceutical science natural ingredients with the ultimate goal, fruits that can overcome various health problems.

Keywords: *Psidium Guajava, Carica Papaya* L, *Mangifera Indica L*

I. INTRODUCTION

Indonesia is a tropical climate country which only has two seasons, namely the rainy season and the dry season. In general, the rainy season on Indonesia occurred during the Western monsoon while the season Drought occurs during the East Monon. Although the season occurs periodically, but the season can Experiencing a shift such as the more long the rainy season and the more resignation of the season drought (Rahayu et al, 2018)

Vitamins are substances that cannot formed by the body and plays a role organic catalyst, regulates the process metabolism, and normal body function. Vitamins will be damaged in processing and storage wrong. Vitamin can be divided into two, namely vitamins fat soluble and water soluble vitamins. Fat soluble vitamins require fat for absorption. If it happens excess intake of fat-soluble vitamins, then the excess will be stored in the heart and adipose tissue (Tumiwa et al, 2020).

Fruits are a meadow Vitamin source. Fruits are quickly damaged by Mechanical, chemical and microbiological influences so it's easy to get rotten. By because of that should be done by the fruiting of the fruit with The purpose is to extend its time (Yusmita and Wijayanti, 2018)

Crystal guava is a new variety of guava developed in Taiwan in 1991 then developed in Indonesia in 2009 until now. Guava Crystals are unique in terms of texture and shape in general.

Advantages of Crystal guava depends on its size, taste and color. Medium size, The flesh is thick white and has few seeds, the taste is sweet with water content slightly soft with a slightly soft

texture when chewed like a pear and crunchy. Crystal guava has nutritional content which is quite good, contained in 100 g of fresh ripe crystal guava: 0.9 g protein; 0.3 g fat; 12.2 g carbohydrates; 14 mg Ca; 28 mg phosphorus; 1.1 mg iron; 25 SI of B vitamins; 18.73 mg vitamin C; sugar 9.2%; and 87.4% water with a total of 49 calories (Sasmi et al, 2022)

Papaya (Carica papaya Linnaeus) is a type of shrub plant has a height of 2-10 meters. Pawpaw also includes tropical plants wet which is able to thrive in area with a height of 0 m - 1500 m above sea level. There are lots of green papayas in the fruit contains vitamin A, namely amounting to 0.7065 in 1 gram of fruit green papaya. Vitamin A is a substance Important micronutrients for postpartum mothers. Vitamin A helps the anterior pituitary to stimulate hormone secretion prolactin in the brain epithelium and activates epithelial cells in the alveoli to store milk inside breast (Siagian et all, 2019).

Mango is a fruit that can grow in tropical areas. mango fruit occupies Ranked 2nd as a tropical plant after banana. Mango fruit is an important source of micronutrients, vitamins and other phytochemicals. In addition, mango fruits provide energy, dietary fiber, carbohydrates, protein, fat and phenolic compounds. Mango fruit contains vitamin C quite high and can be consumed in any form fresh or processed. General nutritional value of mango per 100 g consists of 272 kJ (65 kcal) of energy, carbohydrates 17 g, sugar 14.8 g, dietary fiber 1.8 g, fat 0.27 g, protein 0.51 g, vitamin A equiv. 38 mg, beta-carotene 445 mg, thiamine (Vitamin B1) 0.058 mg, riboflavin (Vitamin B2) 0.057 mg, niacin (Vitamin B3) 0.584 mg, pantothenic acid (Vitamin B5) 0.160 mg, vitamin B6 0.134 mg, folate (Vitamin B9) 14 mg, vitamin C 27.7 mg, calcium 10 mg, iron 0.13 mg, magnesium 9 mg, phosphorus 11 mg, potassium 156 mg, and zinc 0.04 mg (Novia et al, 2015).

II. TROFICAL FRUITS

1. Guava (*Psidium Guajava)*

Crystal guava is a new variety of guava developed in Taiwan on In 1991 it was later developed in Indonesia in 2009 until now. Guava Crystals have a uniqueness in terms of texture and form in general. Advantages of Crystal guava located in its size, taste, and color. Crystal guava belongs to Kingdom Plantae, Superdivision Spermatophyta, Division Magnoliophyta, Class Magnoliopsida, Order Myrtales, Family Myrtaceae, Genus Psidium, Species Psidium guajava (L.) Merr (Sasmi et al, 2022).

Figure 1. ***Psidium Guajava***
Sumber *(https://www.blibli.co.id)*

Vitamin C (ascorbic acid) is a type of water-soluble vitamin and has an important role in the body, as a coenzyme or cofactor. The function of vitamin C has a lot to do with the formation of collagen which is a protein compound that affects the integrity of cell structures in all connective tissues, such as cartilage, teeth, capillary membranes, skin and muscle tendons. Thus, vitamin C plays a role in healing wounds, broken bones, maintaining healthy teeth and gums. Guava fruit also has a fairly complete nutritional content, especially high levels of vitamin C, and has a pleasant taste. Guava has nutrition and power great healing. Guava has gives a lot of health and strength In thousands of years. Guava plays a very role important in our diet because it is not just delicious the taste, but also very nutritious as well contains various substances that can help Treat various diseases (Norlita and Siwi, 2017, h. 131).

The benefits of guava as a medicine are not can be denied. The results of United researchers States Department of Agriculture (USDA) found that guava is a fruit with the

richest antioxidant content between Family Fruit. Vitamin C content in one cup of guava five times more Many of the oranges, which is 377 mg. Vitamin C is a very good basic ingredient of collagen to overcome wrinkled problems on the faces Woman. This is also supported by studies from Harvard University which suggests from study of 48,000 men. Respondent which adds the most intake lycopene in their diet menu will experience reduces the risk of prostate cancer by as much 45% (Norlita and Siwi, 2017).

2. Papaya (Carica papaya L.)

Papaya plants that have the Latin name (Carica Papaya L). Papaya is a plant originating from the southern mekso and nicaragua. Then Papaya plants expand and be cultivated in tropical countries including Indonesia. Papaya belongs to Kingdom Plantae, Division Magnoliophyta, Class Magnoliopsida, Order Brassicales, Family Caricaceae, Genus Carica, Species Carica papaya L (Siagian et all, 2019). The papaya plant (Carica papaya L.) is a large, tree-like fruit plant from the Caricaceae family native to Mexico and Central and South America. It is also known as the pawpaw, mummy apple, melon tree, mamão, and mamón (Goriainov et all, 2023, h. 1)

Figure 2. *Carica Papaya* L.
Sumber (*https://www.detikpedia.co.id*)

Carica papaya L is one of the fruit commodities that can be used almost as much. Papaya plant parts such as roots, leaves, fruits and seeds contain phytochemicals: polysaccharides, vitamins, minerals, enzymes, proteins, alkaloids, glycosides, saponins and flavonoids which can all be used as nutrients and drugs (Suketi dkk, 2010, h. 17).

Indonesia is one of the regions tropical, almost everywhere it is found papaya plant. Many people like papaya fruit by the public because it has a sweet taste and contains many nutrients and vitamins. Papaya fruit contains 10% sugar, vitamin A and vitamin C. sugar content the main ones are sucrose 48.3%, glucose 29.8% and fructose 21.9%. Estimated vitamin content A 450 mg and vitamin C 74 mg from 100 g portion edible (Suketi dkk, 2010, h. 17).

3. Mango (*Mangifera Indica L)*

Figure 3. ***Mangifera Indica L***
Sumber (*https://www.istockphoto.co.id*)

The mango plant is a fruit plant annual in the form of trees originating from country of India. They were first introduced to Asia, then to the rest of the world. Mangoes rely on people to carry them throughout the world because of their enormous central seed (Sanju, 2023, h. 2770). This plant then spread to Southeast Asia including Malaysia and Indonesia (Oktavianto et al, 2015). Mango is a member of the kingdom Plantae, Division Tracheophyta, class Magnoliopsida, order Sapindales, and family Anacardiaceae (Wati and Puspasari, 2023, h. 30)

Just like oranges, mangoes are also famous for their vitamin C content. Not only vitamin C, mangoes also contain other nutrients such as vitamin A, vitamin B complex, vitamin E, potassium, iron, fiber, carbohydrates, antioxidants, folic acid and many other nutritional contents (Oktavianto et al, 2015). In addition to mango, lime juice is also added to the fruit leather as a source of vitamin C. Lime fruit (Citrus aurantifolia) contains bioflavonoids, pectin, enzymes, proteins, fats, and pigments (Wati and Puspasari, 2023, h. 30).

In botany, mango is called mangifera indica L. which means mango plants originate from India. From India, around the 4th century BC, mango plants spread to various countries, namely through Indian traders who traveled east to the Malaysian peninsula. In Indonesia, mangoes began to be planted in the Maluku Islands in 1665. The spread of mangoes in Indonesia was almost evenly distributed even that the people had considered that mangoes as one of the native fruit plants of Indonesia (Novia et al, 2015).

III. VITAMIN IN TROFICAL FRUITS

Fruits are a source of natural ingredients that contain various antioxidant compounds and are high. Compared to synthetic antioxidants, natural antioxidants are generally safer for consumption and can improve the degree of health of the body. Indonesia is one of the eight centers of plant genetic diversity in the world, especially tropical fruits that have the potential as a source of natural antioxidants (Febrianti dkk, 2015, h. 6)

Inflammation is part of the complex biological response of vascular tissue to stimuli, such as pathogens, damaged cells, or irritants. Nonsteroidal anti-inflammatory drugs (NSAIDs) are a group of drugs used to reduce inflammation, relieve pain, and reduce fever (Nurjanah and Sumiwi, 2019).

Antioxidant activity test of ethanolic extract from solanum family leaves using free radicals dpph reduction. Oxidation is a chemical reaction that can produce free radicals, thus triggering a chain reaction that can damage cells. Antioxidants such as thiols or ascorbic acid put an end to this chain reaction (Artanti and Lisnasari, 2018, h. 63).

Guava *(Psidium Guajava* L.) is a tropical fruit that is rich in vitamin C, with three times the amount found in oranges, ten times the amount found in papaya, and thirty times the amount found in bananas. The content of vitamin A in guava is also high, and can be consumed regularly as a good antioxidant (Sasmi dkk, 2022). Guava fruit also has a fairly complete nutritional content, especially high levels of vitamin C, and has a pleasant taste (Aliansa dkk, 2023, h. 6). Crystal guava has various health benefits, such as antioxidant properties, improving digestive health, helping to lose weight, relieving flu symptoms, maintaining eye health, and nourishing the skin (Sasmi et all, 2019).

Papaya fruit is a fruit that is versatile and has high nutritional value, especially vitamin C and vitamin A. The content of ripe papaya fruit (100 gr), calories 39 calories, water 86.7, fat

0.0 grams, protein 0.5 gram, calcium 23.0 mg, phosphorus 12.0 mg, iron 0.4 mg, vitamin A 5365 SI, vitamin B1 0.04 mg, vitamin C 78 mg (Fatmawati dkk, 2023, h. 380). Green papaya is traditionally used for a variety of medicinal purposes, including treating digestive disorders, such as stomach ulcers and constipation. Green papaya contains enzymes, such as papain, that have been shown to have anti-inflammatory and wound-healing properties (Siagian et all, 2019).

Mango (Mangifera indica L.) is one of the most important fruits worldwide due to its nutritional value and content of diverse phytochemicals, with diverse functions (Yahia dkk, 2023, h. 2). Mango is composed of carbohydrates, minerals, fiber and vitamins which are highly essential for human health. It is rich in vitamins A and C, minerals like potassium, magnesium and calcium and antioxidants as well, which can help us to stay healthy. On other hand vitamin K, aids in blood clotting and helps to avoid anemia. They are also high in vitamin C, which is necessary for the formation of blood vessels and good collagen, as well as for healing (Sanju, 2023, h. 2770).

IV. CONCLUSION

Psidium Guajava L, Mangifera Indica L, and *Carica Papaya* L are tropical fruits that have many benefits for the human body. One of them as an anti-inflammatory and antioxidant. namely the class of traditional medicine to reduce inflammation and protect body cells from the effects of free radicals that have the potential to cause various diseases.

Further research is needed to better know the content of vitamins and pharmaceutical science natural ingredients with the ultimate goal, fruits that can be used to overcome various health problems.

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