

MANGOESTEEN'S RIND AS A NATURAL TRADITIONAL CAKE COLOURING

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Abstract

Mangosteen (*Garcinia mangostana*) is a kind of timeless green trees of tropical regions are believed to have originated from the archipelago. This tree grows from 7 meters until 25 meters. The fruit also called mangosteen, purplish red when ripe, though there are also variants of the red skin. Mangosteen fruit is known in the trade as the "queen of fruits", as a couple of durian, the "king of fruits". Mangosteen fruit production in 2011 was 136 080 tones, the export volume of the Mangosteen fruit during January and February 2010 increased significantly, almost equaling the volume of exports during the year 2009. Based on data from the Central Statistics Agency (BPS), exports of Mangosteen (or commonly known exotic fruit) for the period January and February 2010 reached 8225 tons, soared 91% over the export volume from January to February 2009 which was only 4285 tons. Based on an investigation, the original Mangosteen fruit of Southeast Asia can produce Xanthone, which is a substance formed from the isolated skin of the Mangosteen fruit, whose levels are reached 123.97 mg per ml. Xanthonenes have anti-inflammatory and antioxidant activity. In addition, Mangosteen rind is also used as natural dyes and pharmaceuticals raw materials. The results showed that extracts of Mangosteen can against skin cancer cells, and also breast cancer, liver, and leukemia. In addition, it is also used to antihistamines, antiinflamasi, suppress the central nervous system, and blood pressure, and anti-inflammatories. Skin of the Mangosteen also contains anthocyanins such as cyanidin-3-sophorose, and cyanidin-3-glucoside. These compounds play an important role in skin coloration mangosteen. The skin contains pectin compounds, tannins, and resin are used for tanning leather and the black coloring agent for food and textile industries, while and yellow sap used as raw material for paints and insecticides.

Keywords: Mangosteen, natural colouring, *xanthone*.

INTRODUCTION

Since hundred years ago, the population of Southeast Asia, especially Indonesia, have often used the mangosteen peel boiled water as an herb to treat infections, wounds, fever, diarrhea, ulcers and constipation. Not only boiled water from the powder of dried mangosteen peel it also used to treat dysentery in China and India. Mangosteen's rind is also made into ointment for treating eczema and other skin diseases. Beside the rind, the mangosteen's flesh was trusted to treat diarrhea, tonsillitis, hemorrhoids vaginal discharge, laxative sputum and a toothache. Many of the colouring used in foods today contain substances that are not safe, for example rodamin-B substances that cause impaired liver function or liver cancer, and tertazine methanol yellow substance that causes tumors in the kidney and adrenal, quinoline yellow and carmine substances cause children to become hyperactive and cause allergic reactions, substances erythosine cause thyroid tumors and cancer-causing substances amaranth and poisoning causing death.

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MATERIALS AND METHOD

Mangosteen's rind was rich in Xanthones efficacious compounds. Xanthones are the powerful antioxidants pelifenol that compound naturally occurring in the tropical rain forest plants and dark red fruit, but none can match the high content of xanthone in mangosteen's rind called the pericarp.

Xanthones are large molecules that composed of many small molecules that are antioxidants and proven benefits to the human body, such as the fight or neutralize free radicals that enter or produced in our body. Xanthones have anti-cancer activity, antibacterial and anti-inflammatory. In addition, the xanthone also has the potential to maintain immune system health, mental health support, microbiological balance and increase flexibility of the joints. Xanthones are categorized as polyphenols, xanthone a cyclic ketone polyphenolic compounds with molecular formula $C_{13}H_{10}O_2$. The main structure consists of three benzene xanthone with an adjoining benzene which is ketones. Almost all molecules have xanthone derivatives of phenol. Chemical components in the xanthone include: BR Xanthones A, BR Xanthones B, Bezoquinon antrovirinon, Garcinone A, Garcinone B, Garcinone C, Garcinone D, Garcinone E, Garcimangosone A, Garcimangosone B, Garcimangosone C, 1-Isomangostin, 3-Isomangostin, 1-Isomangostin hidrat, γ -mangostin, Mangostanol, Norathriol, Gartanin, Garcinidon A, Garcinidon B, Garcinidon C, Dementhyalabaxanthine, Mangostenone, Mangostanin, Macluri, Mangostano, mangostin, Mangostinone A, Mangostinone B, α -mangostin, β -mangostin, Tovophylin A, Tovophylin B, Trapezifolinxanthone. In addition, catechins and vitamin C is also a chemical component contained in the xanthone.

RESULT AND DISCUSSION

What is causes the mangosteen's rind potent overcame many various diseases? The Pharmacists from the University of Indonesia, Dr Berna Elya.Apt.,MSi said mangosteen's rind elixir to overcome various diseases due to xanthone compounds. The compound was a high level of antioxidants. "The content of the mangosteen's rind are 66.7 times and 8.3 times the orange ," food technology experts from the Institute for Agricultural Engineering Research and Development, Serpong, South Tangerang, Banten, Ir. Dr. Raffi Paramawati said. Berna said xanthone has a hydroxide group (OH), which effectively scavenge free radicals in the body. Free radicals damage cells of the body. Raffi said powerful mangosteen's rind can neutralize free radicals. Value of xygen radical absorbance capacity (ORAC) xanthone reach 17.000-20.000. Compare with other antioxidants such as grape which is only 1.100, and apple only apple 1.400.

A lecturer of chemical engineering ITN Malang Fadliyah Nilna Minah was take advantage of mangosteen's rind to produce a natural colouring. It's very easy to making it, only with the process of evaporation of the substance and antosianin will come out. Research conducted by Nilna, as she was usually called, was carried out in three stages. The first phase of exploration conducted mangosteen's rind to issue yellow and purple. In the second stage of research was try to make dyes from mangosteen's rind into a powder. And the third one done to relieve the acid produced from leather dyes from mangosteen's rind. The purpose of this acid was to relieved the resulting dye can be used to make a variety of cakes or drinks. With the use of natural dyes using mangosteen's rind, in expected to extend the saving life of the product that allows to be exported abroad.

CONCLUSIONS

Increased benefits and use of natural dyes mangosteen's rind as safe food for consumption. Natural dyes can be obtained easily and around of us, and can be managed so beneficial for health. It can be Provide of value added for mangosteen's fruit that are not only the fruit that can be eaten, but the rind can also be used as a dye for food.

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