



Comparison of bioactive compounds, antioxidant and antiproliferative activities of Mon Thong durian during ripening

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ARTICLE INFO

Article history:

Received 12 March 2009

Received in revised form 7 May 2009

Accepted 11 May 2009

Keywords:

Mon Thong durian

Ripening

Bioactive compounds

Fatty acids

Antioxidant

Antiproliferative activities

ABSTRACT

The aim of this investigation was to compare the bioactive and nutrient compounds, fatty acids, and anti-oxidant and antiproliferative activities of Mon Thong durian at different stages of ripening. It was found that the total polyphenols, flavonoids, flavanols, ascorbic acid, tannins and the antioxidant activity determined by four assays (CUPRAC, DPPH, ABTS and FRAP) differed in immature, mature, ripe and overripe samples. The content of polyphenols and antioxidant activity were the highest in overripe durian, flavonoids were the highest in ripe durian, and flavanols and antiproliferative activity were the highest in mature durian ($p < 0.05$). FTIR spectra of polyphenols, HPLC profiles of fatty acids, the antioxidant and antiproliferative activities can be used as indicators to characterise different stages of durian ripening.

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1. Introduction

Durian (*Durio zibethinus Murray*) is one of the most important seasonal fruits in tropical Asia. Durian cultivars are derived from *D. zibethinus Murray*, originating in the Malay Peninsula (Voon, Hamid, Rusul, Osman, & Quek, 2007). The importance of this fruit is mostly connected with its composition and antioxidant properties (Arancibia-Avila et al., 2008; Leontowicz et al., 2008; Toledo et al., 2008). It has been reported that durian has additional valuable health properties: polysaccharide gel, extracted from the fruit hulls, reacts on immune responses and is responsible for cholesterol reduction (Chansiripornchai, Chansiripornchai, & Pongsamart, 2008). The glycaemic index of durian was the lowest in comparison with papaya and pineapple (Daniel, Aziz, Than, & Thomas, 2008). The health properties of durian are based not only on the antioxidant properties, but also on

its fatty acid composition. Cholesterol hypothesis implied that reducing the intake of saturated fats and cholesterol while increasing that of polyunsaturated oils is effective in lowering serum cholesterol, and thereby in reducing coronary heart disease. The protective activity is linked with a high supply of $n-3$ fatty acids coming from fish and seafood, and high consumption of wholegrain products, as well as fruits and vegetables (Siondalski & Lysiak-Szydłowska, 2007). Durian is rich in $n-3$ fatty acids, compared to some other fruits (Phutdhawong, Kaewkong, & Buddhasukh, 2005).

Recently, it has been shown that individuals who eat daily five servings or more of fruits and vegetables have approximately half the risk of developing a wide variety of cancer types, particularly those of the gastrointestinal tract (Gescher, Pastorino, Plummer, & Manson, 1998). Therefore the antiproliferative activities of methanol extracts of Mon Thong durian at different stages of ripening on human cancer cell lines (Calu-6 for human pulmonary carcinoma and SNU-601 for human gastric carcinoma) were determined using MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) assay. As far as we know there are no published results of such investigations.

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