

Total Polyphenol Content and Antioxidant Properties in Different Tissues of Seven Pomelo (*Citrus grandis* (L.) Osbeck) Cultivars

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ABSTRACT

Pomelo (*Citrus grandis* (L.) Osbeck) is one of the popular Thai fruits, which is well known for having high antioxidant properties. The total polyphenol content and antioxidant properties (1,1-diphenyl-1-picrylhydrazyl, DPPH) and ferric reducing antioxidant power (FRAP) were determined in seven of the many pomelo cultivars growing in Thailand—namely, Kao Numpueng (KNP), Thong Dee (TD), Kao Paen (KP), Kao Yai (KY), Tha Knoi (TK), Pattavee (PV) and Kao Tanggwa (KTG). Different parts of the fruit tissue consisting of flavedo, albedo, segment membranes and seeds, were tested. The results indicated that the total polyphenol content was highest in the seeds in all cultivars (3,108.78–4,957.97 $\mu\text{g}\cdot\text{g}^{-1}$), while for the other parts, the ranking in decreasing order was albedo (1,176.58–3,384.81 $\mu\text{g}\cdot\text{g}^{-1}$), flavedo, (1,096.27–2,163.63 $\mu\text{g}\cdot\text{g}^{-1}$) and segment membranes (825.68–2,266.66 $\mu\text{g}\cdot\text{g}^{-1}$), respectively. The antioxidant properties (DPPH) were highest in the seeds, while for the other parts, the ranking in decreasing order was albedo, flavedo and segment membranes. By cultivar, Thong Dee (TD) produced the highest total polyphenol content and antioxidant properties (DPPH and FRAP) in the flavedo and seeds. Tha Knoi (TK) had the highest total polyphenol content and antioxidant properties (DPPH and FRAP) in the albedo and segment membranes. Kao Tanggwa (KTG) had the highest antioxidant properties (DPPH) in the seeds. A linear relationship between the total polyphenol content and the DPPH has a coefficient of determination (R^2) of 0.702, and for FRAP the R^2 was 0.659. Thus, edible tissues of pomelo could be a source of bioactive compounds which is high in antioxidant properties and suitable for industrial processing.

Keywords: pomelo, antioxidant properties, edible tissues, citrus fruit

INTRODUCTION

Pomelo (*Citrus grandis* (L.) Osbeck) is the largest citrus fruit (Hodgson, 1967). Many cultivars are grown in Thailand and can be divided into two groups according to whether they are colored white or pink, with Tong Dee and Tha

Knoi being in the pink group while the white group includes Kao Yai, Kao Paen, Kao Nampheung, Kao Tanggwa, Kao Hom, Kao Phuang and Pattavee (Pichaiyongvongdee and Haruenkit, 2009). Citrus fruits have been recognized as a good source of health-promoting compounds including carotenoids, flavonoids, linonoids and

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