

## ABSTRACT

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### **ANALYSIS PHENOLIC AND FLAVONOID CONTENT ALSO ANTIOXIDANT ACTIVITY OF POMELO GIRI MATANG FRUIT (*Citrus Maxima* var. *Giri Matang*) PULP AND PEEL.**

Thesis, Faculty Science and Technology (2018).

(xiv+ 135: 28 figures; 13 tabels; 6 appendixes)

Polyphenols are the largest source of antioxidants in the human diet found in many fruits and vegetables, including citrus fruits, especially pomelo. Pomelo Giri Matang (*Citrus maxima* var *Giri Matang*) origin Aceh is one of the local cultivars of pomelo oranges in Indonesia that has not been studied about the phenolic, flavonoids and antioxidants content of pulps and peels. Pomelo pulps and peels were extracted using maceration method with ethanol and then fractionated with hexane and ethyl acetate. Then, three fractions were evaporated at 50° C using a rotary evaporator. Phenolic and flavonoid content were measured respectively through the Folin-Ciocalteu and colorimetric  $AlCl_3$  methods. At the same fraction, antioxidant activity measured using DPPH method. Identification of flavonoid compounds was performed on the fraction of ethyl acetate pulp and peel using LC-MS/ MS. The results obtained were the ethyl acetate fraction having the highest phenolic and flavonoid content compared to the other two fractions with TPC  $2.87 \pm 0.11$  mg GAE / g FW (EA-EAD) and  $4.30 \pm 0.29$  mg GAE / g FW (EA-EAK) and TFC  $1.76 \pm 0.19$  mg QE / g FW (EA-EAD) and  $3.55 \pm 0.31$  mg QE / g FW (EA-EAK). The ethyl acetate fraction also has the highest antioxidant activity with  $IC_{50}$  values were  $1.43 \pm 0.05$  mg /ml (EA-EAD) and  $0.78 \pm 0.09$  mg/ ml (EA-EAK). A strong correlation was shown between phenolic and flavonoid content with antioxidant activity with  $R^2$  values ranged from 0.93 to 0.81. The identification of flavonoid compounds in the ethyl acetate fraction showed the presence of four flavonoid compounds such as kaempferol-3-O-rutinoside, naringenin, narirutin, and 2 "-O-Acetyl-3'-O-methylrutine, and one lignan compound namely schisantherin C.

Keywords: phenolic, flavonoids, antioxidants, pomelo Giri Matang, identification.

References: 129 (1990 - 2017).

## ABSTRAK

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### **ANALISIS KANDUNGAN FENOLIK DAN FLAVONOID SERTA UJI AKTIVITAS ANTIOKSIDAN DAGING DAN KULIT BUAH POMELO GIRI MATANG (*Citrus Maxima* var. *Giri Matang*)**

Tugas Akhir, Fakultas Sains dan Teknologi (2018).

(xiv + 135 halaman: 28 gambar; 13 tabel; 6 lampiran)

Polifenol merupakan sumber antioksidan terbesar dalam pola makan manusia yang banyak ditemukan pada berbagai buah dan sayuran salah satunya buah jeruk khususnya jeruk pomelo. Pomelo Giri Matang (*Citrus maxima* var. *Giri Matang*) asal Aceh merupakan salah satu kultivar lokal jeruk pomelo Indonesia yang belum banyak diteliti mengenai kandungan fenolik, flavonoid dan antioksidan pada daging dan kulit pomelo. Daging dan kulit diekstrak menggunakan metode maserasi dengan pelarut etanol dan kemudian difraksinasi dengan pelarut heksan dan etil asetat. Kemudian, tiga fraksi dievaporasi pada suhu 50 °C menggunakan *rotary evaporator*. Kandungan fenolik dan flavonoid diukur masing-masing melalui metode Folin-Ciocalteu dan kolorimetrik  $AlCl_3$ . Pada fraksi yang sama juga diukur aktivitas antioksidan menggunakan metode DPPH. Identifikasi senyawa flavonoid dilakukan pada fraksi etil asetat daging dan kulit pomelo menggunakan LC-MS/MS. Hasil yang didapat yaitu fraksi etil asetat memiliki kandungan fenolik dan flavonoid tertinggi dibandingkan kedua fraksi lainnya dengan TPC  $2,87 \pm 0,11$  mg GAE/g FW (EA-EAD) dan  $4,30 \pm 0,29$  mg GAE/g FW (EA-EAK) dan TFC  $1,76 \pm 0,19$  mg QE/g FW (EA-EAD) dan  $3,55 \pm 0,31$  mg QE/g FW (EA-EAK). Fraksi etil asetat juga memiliki aktivitas antioksidan tertinggi dengan nilai  $IC_{50}$  yaitu  $1,43 \pm 0,05$  mg/ml (EA-EAD) dan  $0,78 \pm 0,09$  mg/ml (EA-EAK). Korelasi yang kuat ditunjukkan antara kandungan fenolik dan flavonoid dengan aktivitas antioksidan yaitu nilai  $R^2$  berkisar 0,93-0,81. Identifikasi senyawa flavonoid pada fraksi etil asetat menunjukkan adanya empat senyawa flavonoid yaitu kaempferol-3-O-rutinoside, naringenin, narirutin, dan 2''-O-Acetyl-3'-O-methylrutin, dan satu senyawa lignan yaitu schisantherin C.

Kata kunci: fenolik, flavonoid, antioksidan, pomelo Giri Matang, identifikasi.

Referensi: 129 (1990 - 2017).