

Identification And Quantification of Phenolic And Non-Phenolic Antioxidant Compounds In Indigenous Vegetables of Indonesia

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ABSTRACT

The aims of this study were to identify and quantify the phenolic compounds (flavonoids and phenolic acids) and non-phenolic compounds (p-carotene and ascorbic acid) in 24 indigenous vegetables of Indonesia. The flavonoids (flavonols: quercetin, kaemferol, myricetin, and flavones: luteolin and apigenin) and phenolic acids (chlorogenic acid, caffeic acid, ferrulic acid) and p-carotene were analyzed by chromatographic method, anthocyanins were analyzed by spectrophotometric method, whereas ascorbic acid was analyzed by titration method. As the results, total flavonoids content ranged from 3.77 mg up to 831.7 mg. Quercetin was found in all samples, kaemferol was also found in all samples except in kecombrang, krokot, takokak and terubuk. Myricetin, luteolin and apigenin were only found in certain samples. Three samples contained highest phenolic acids compounds were kedondong cina leaves (357.13 mg), takokak (179.11 mg), and antanan beurit (163.20 mg). The chlorogenic acid was found in all samples, except in turi flowers and the content ranged from 0.99 mg to 322.68 mg. The caffeic acid was found in all samples, except in mengkudu leaves, jambu mete leaves, turi flower, and kedondong cina leaves. The content ranged from 4.12 mg to 45.09 mg. The ferrulic acid was found in all samples, except in pakis leaves, antanan beurit, and beluntas leaves. The content ranged from 0.94 to 34.44 mg. Total carotenoids were highest in kemangi (58.41 mg), while lowest in turi flowers (3.65 mg) and the average value of the 24 samples was 29.01 mg. p-carotene was highest in labu leaves (13.27 mg), while lowest in kecombrang (0.01 mg) and the average value of 24 samples was 5.30 mg. Anthocyanins were highest in kecombrang (43.19 mg), while lowest in pakis (0.67 mg) and the average value of 24 samples was 8.24 mg. Ascorbic acid was highest in jambu mete leaves (5607.78 mg), while lowest in mangkokan putih leaves (236.54 mg) and the average value of 24 samples was 1194.70 mg. All of values were calculated based on 100 grams of dry basis sample. PCA (Principal Component Analysis) results showed that the total phenolics with total flavonoids and total phenolic acids were positively correlated as well as total flavonoids with total phenolic acids and total carotenoids with p-carotene and ascorbic acid.

Keywords: *indigenous vegetables, phenolics, flavonoids, flavonols, flavones, anthocyanins, phenolic acids, p-carotene, ascorbic acid*