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Physicochemical characterization between green and roasted arabica (*Coffea arabica*) and robusta (*Coffea canephora*) coffee beans

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In general, differences about physicochemical properties of green and roasted coffee still confused people. Aim of this study was to determine compounds such as chlorogenic acid, caffeine and proximate composition in green and roasted coffee beans of two different species (*Coffea arabica* and *Coffea canephora*). Extraction of chlorogenic acid (CGA) from coffee beans was done by using isopropanol solvent and water with ratio 60:40 and determination of CGA content was conducted using high performance liquid chromatography (HPLC) equipment. As for extraction of caffeine, ethyl acetate was used as solvent extraction and the determination of caffeine content was conducted using UV-Vis spectrophotometer. Determination of total phenolic content (TPC) was conducted using Folin-Ciocalteu assay and proximate compositions were analyzed according to AOAC methods. The study shows that CGA content is higher in green robusta coffee (2395.88 ppm) compared to roasted robusta coffee (704.33 ppm). Significant difference on CGA content between green and roasted coffee were due to roasting process which the high temperature has degrading the CGA content. Similarly, green arabica had 2374.33 ppm CGA while roasted arabica had 291.43 ppm CGA. Meanwhile, the total phenolic content (TPC) in green robusta coffee (5.48 mg/g) was significantly higher than green arabica (4.67 mg/g). Similarly, roasted robusta resulted in 2.96 mg/g and roasted arabica contained 1.80 mg/g. Green robusta coffee resulted in lower fat content (9.55 g/100 g) compared to green arabica coffee (12.95 g/100 g). In conclusion, green robusta coffee has higher phenolic contents that could contribute to higher antioxidants compared to arabica coffee. Roasting also significantly reduces the existing phenolic contents in coffee beans.

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