

Monwadee Hunjaroen 2009: Effect of Cultivar and Maturation on Phenolic Compounds and Antioxidant Capacity of Mulberry Fruit. Master of Science (Food Science),
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Effect of cultivar and maturation on phenolic compounds and antioxidant capacity of mulberry fruit (cv. KPS-MB-42-1, Chiangmai and Burirum 60) were investigated. Each mulberry cultivar was classified into 4 stages : immature (stage1), semi-mature (stage2), mature (stage3) and fully mature (stage4). Total phenolic and total monomeric anthocyanin contents and antioxidant capacity (1, 1-diphenyl-2-picrylhydrazyl radical (DPPH) and 2, 2-azino-bis (3-ethylbenzthiazoline -6-sulfonic acid) diammonium salt (ABTS) assays) were also evaluated. Major phenolic compounds were identified using High Performance Liquid Chromatography (HPLC). The results showed that total phenolic, total monomeric anthocyanin contents and antioxidant capacity of mulberry fruits varied greatly among cultivars and maturation stages. Total phenolic content varied from 892 to 3,318 mg gallic acid equivalents/100 g dry weight (DW) basis and total monomeric anthocyanin content varied from 3 to 1,844 mg cyanidin-3-glucoside/100 g DW basis. The DPPH and ABTS radical-scavenging capacity of mulberry fruit ranged from 503 to 2,812 mg vitamin C equivalents antioxidant capacity (VCEAC)/100 g DW basis and 1,198 to 4,926 mg VCEAC/100 g DW basis, respectively. For all cultivars, fully mature stage had the highest radical-scavenging capacity and total phenolic content. At the fully mature stage, KPS-MB-42-1 had the highest total phenolic content, total monomeric anthocyanin content and ABTS radical-scavenging capacity ($p \leq 0.05$), while KPS-MB-42-1 and Burirum 60 had the highest DPPH radical-scavenging capacity ($p \leq 0.05$). Total monomeric anthocyanin content in all cultivars increased as maturity increased. HPLC analysis showed that predominant phenolic compounds in mulberry were cyanidin-3-glucoside, cyanidin-3-rutinoside and chlorogenic acid. Quercetin-3-rutinoside is also identified as a minor phenolic compound. As maturity increased, chlorogenic acid content decreased, while quercetin-3-rutinoside, cyanidin-3-glucoside and cyanidin-3-rutinoside contents increased.

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