Total phenolic, flavonoid contents and Antioxidant Activity of Thai stingless bee honey (*Tetragonula pegdini*) from different botanical regions in Chanthaburi

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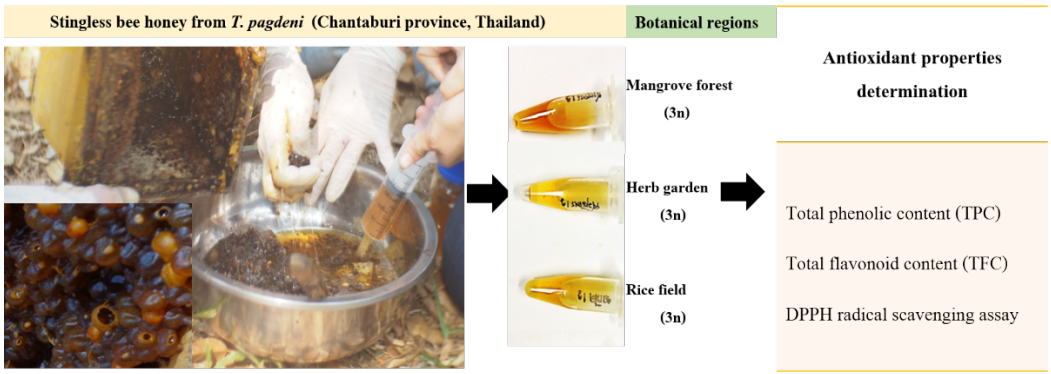
Abstract: It is well established that stingless bee honey (SBH) contains substantial antioxidant compounds that could prevent oxidative stress in humans and has several beneficial properties for health such as anti-inflammatory, antioxidant and antimicrobial activities. In this study, three SBH samples produced by *Tetragonula pegdini* were collected from different three botanical and geographical regions in Chantaburi province, Thailand, including mangrove forest, rice field and herb garden. The total phenolic content of the SBH samples were examined using Folin–Ciocalteu reagent. Total flavonoid content was determined by aluminium chloride method. Antioxidant activity was also characterized by performing reaction with DPPH radical. The results revealed the SBH from mangrove forest had the highest phenolic and flavonoid contents with 2.66±0.13 g GAE /100 g and 0.91±0.01 QE/ 100 g honey, respectively ($p<0.05$). The radical scavenging DPPH assays further demonstrated that significantly higher antioxidant activity (10.02±0.12 mg Trolox/100 g of honey) was detected in SBH sample collected from mangrove forest when compare with the samples collected from the herb garden (9.31±0.15 mg Trolox/ 100 g honey) and rice field (6.95±0.13 mg Trolox/ 100 g honey), respectively ($p<0.05$). Statistical analysis demonstrated positive correlation between the antioxidant activities of honeys and their total phenolic and flavonoid contents. This research might promote the exploitation and the development of alternative natural products from stingless bee honey.

Graphical abstract:



Keywords: Stingless bee honey; Antioxidant; Phenolic acid; Flavonoids

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