

ABSTRACT

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STUDY OF ANTIOXIDANT ACTIVITY OF BETEL NUT (*ARECA CATECHU* L.) EXTRACT AND ITS INCORPORATION INTO GREEN TEA BEVERAGE

(xiii + 116 pages: 5 tables, 22 figures, and 15 appendices)

*Nowadays, people tend to consume food and beverage that contain antioxidants which can help to maintain their health and prevent them from diseases. Betel nut (*Areca catechu* L.) has been used as herbal medicines due to its antioxidant contents. Green tea contains various nutrients including antioxidants such as polyphenols. This research was conducted to study the antioxidant activity of betel nut extract and its incorporation into green tea beverage. This research was divided into two steps. In the first step, the betel nut was extracted using two types of extraction method such as maceration and soxhlet extraction using three types of solvents having a different polarity profile including ethanol (polar), ethyl acetate (semi-polar), and hexane (non-polar). The extract obtained by maceration using ethanol exhibit higher antioxidant content (166.78±3.06 mg/g extract for antioxidant activity; 627.33±4.28 mg tannic acid/g extract for total phenolic content; 616.53±1.40 mg tannic acid/g extract for total tannin content; and 616.53±0.4 mg quercetin/g extract for total flavonoid content). In the second step, the best betel nut extract was applied in the green tea beverage with different ratios. Betel nut gives positive contribution to the prepared beverage due to its antioxidant activity which is higher than green tea. Based on its antioxidant content, the best green tea and betel nut extract ratio was 1:3. The antioxidant activity, total phenolic content, total tannin content, and total flavonoid content of the beverage were 201.44±2.33 mg/g sample; 194.37±3.17 mg tannic acid/g sample; 173.00±4.26 mg tannic acid/g sample; and 231.83±1.44 mg quercetin/g sample. While, the best green tea and betel nut extract ratio based on the sensory characteristics were 3:1 and 2:1.*

Keywords: Betel nut, *Areca catechu* L., extraction, antioxidant, green tea

References: 38 (1975 – 2011)