

Title Effects of infusion and storage condition on characteristics of green tea (*Camellia sinensis* L.)

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Citation Abstracts, 14th World Congress of Food Science & Technology, October 19-23 2008, Shanghai, China. 721 pages.

Keyword green tea; *Camellia sinensis*; infusion

Abstract

The effects of infusion temperature and time, and ultra sonification-assisted process infusion on the physico-chemical properties of tea infusion such as total soluble matter (TSM) content, catechins content, free amino acid content, caffeine contents, and colors were investigated. In addition, the stability of green tea infused at 70°C for 3 min during storage at ambient and 4°C were evaluated by the measurement of color, and antioxidant ability with DPPH radical scavenging activity and reducing power, etc. The green tea leaves were infused at the temperature ranged from 40°C and 90°C, for the time ranged from 1 min to 3 hr. TSM content of green tea infusion showed 43% at 90°C for 3 hr while that was 33% at 60°C for 3 hr. Catechin and caffeine contents in green tea infusion significantly increased as infusion temperatures and times increased ($p < 0.05$). The highest contents of catechins and caffeine were observed in green tea infusions extracted at 80°C for 30 min. However, Free amino acid contents in green tea infusion were influenced by more infusion time than infusion temperature. Theanine was the highest amino acid in green tea infusion. Ultra sonification-assisted process significantly improved catechin and caffeine contents of green tea infusion ($p < 0.05$). The optimum infusion condition showing the highest acceptability in the basis of N/T (the ratio of nitrogen content to tannin content) value score were at 80°C and for 3 min~15min. Based on the change in color, DPPH radical scavenging activity, reducing of tea infusion during storage for 1 week, the tea infusion at 4°C showed the better stability than at ambient temperature.