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Research Project Study on the blending of green tea from Chinese tea (*Camellia sinensis* var. *sinensis*) and Assam tea (*Camellia sinensis* var. *assamica*)

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Abstract

Green tea is a simple drink and has warmed the insides of billions of people in the world. In Thailand, there are two major varieties of green tea that continuously being produce over the years which are from Chinese and Assam cultivars. However, the sensory qualities and the price of the Assam green tea (AGT) are lower than Chinese green tea (CGT). In this study, the chemical characteristics, optimum proportion of blending and consumer's acceptance analysis of green tea from the blending of Chinese green tea and Assam green tea were determined. The chemical characteristics of the blends include the total polyphenol content (TPC), caffeine content, total catechin content (TCC), DPPH and FRAP assays and individual catechins. The proposed formulations consist of seven formulations (ratio of CGT: AGT= F1 (100:0), F2 (90:10), F3 (80:20), F4 (70:30), F5 (60:40), F6 (50:50) and F7 (0:100)). The TPC of the blends was varying from 8.642 ± 0.167 to 11.290 ± 0.724 (GAE g/100 dry basis). The caffeine content ranged from 2.062 ± 0.017 to 2.134 ± 0.166 (g/100 g dry basis) and there was no significant difference between formulations. The results for TCC showed that there was no significant between F6 and the other six formulations; however F7 was significantly different from F1, F2, F3, F4 and F6. For antioxidant activities, the DPPH assay was ranged between 104.795 ± 2.497 to 119.338 ± 5.381 (mmol Trolox /100 g dry basis), while there was no significant different between all samples in FRAP assay analysis. The three major catechins found in the green tea blends were (-)-epigallocatechin gallate (EGCG), (-)-epigallocatechin (EGC) and (-)-epicatechin gallate (ECG) where

EGCG was significantly different between all formulations ($p < 0.05$). For sensory analysis, F6 (50:50) was being chosen out of seven formulations based on the colour, odour, taste and overall acceptability ($n=30$). The further sensory analysis found that 72% of panelists had accepted the 50:50 proportion of Chinese and Assam green teas and 60% of the panelists had the intention to purchase the product ($n=50$). The analysis also found that taste was the attribute that influencing the overall acceptance and purchase intent of the tea blend made up from 50% Chinese green tea and 50% Assam green tea.

Keywords **Green tea, Assam cultivar, Chinese cultivar, antioxidant activity, sensory acceptability.**