

ABSTRACT

The present study focused on changes in kind and quantity of tea polyphenols during green (non-fermented) and oolong (semi-fermented) tea processing in Chiang Rai, Thailand. The fresh tea leaves of Assam tea (*Camellia sinensis* var. *assamica*) and two Chinese teas (*Camellia sinensis* var. *sinensis*) named oolong no. 17 and oolong no. 12 were harvested. Tea samples in green and oolong tea processing were collected and determined for moisture and total polyphenol content. The antioxidant activity was evaluated using a 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay. The content of caffeine and individual catechins namely: (-)-epigallocatechin-3-gallate (EGCG), (-)-epigallocatechin (EGC), (-)-epicatechin-3-gallate (ECG), (-)-epicatechin (EC), (-)-gallocatechin (GC), (+)-catechin (C), (-)-gallocatechin gallate (GCG) and (-)-catechin gallate (CG) were determined by HPLC. During manufacture, moisture content obviously decreased in the drying step for green tea and pan firing step for oolong tea. A small fluctuation was observed for caffeine content, DPPH-radical scavenging activity and total polyphenol content. In green tea processing, withering caused the increase in EGC and EGCG. The individual catechin content remained constant in pan firing step. The EGCG content decreased while there was an increase in its epimer (GCG) in the drying step. In oolong tea processing, the fermentation step did not significantly cause the change in catechin content. Pan firing caused the higher content in EGC and EGCG. However, both catechins showed substantial losses and their epimers (GC and GCG) showed significant increase in the rolling step. The drying step did not affect the content of individual catechins. The present results reveal that withering and drying steps highly affected the changes of type and quantity of catechins for green tea while pan firing and rolling steps were found to be the important steps for oolong tea.

Keywords : Antioxidant, Green tea, Oolong tea, Polyphenols, Processing