

Evaluation of Changes in Polyphenol, Amino Acid and Catechins Content during Tea Wine Fermentation

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Tea Wine is an alcoholic beverage prepared by fermenting sugar enriched tea infusion with yeast (*Saccharomyces cerevisiae*). The Tea Research Institute of Sri Lanka developed this process with the intension of introducing diversified product of tea. Information on the changes of important tea constituents during tea wine fermentation will be useful for commercialization of this product. However, there is hardly any recently reported information on the changes in chemical constituent during tea wine fermentation. Polyphenols, catechins and amino acid mainly contribute to the characteristic organoleptic and therapeutic properties of tea. Therefore, the present study was undertaken to investigate changes in polyphenol, catechins and amino acid contents during tea wine fermentation. Filtered black tea infusion with 2% soluble solids (2 °Brix) was obtained and its Brix value was adjusted to 22 by adding sugar. Then this sugar enriched tea infusion was fermented with yeast in glass canisters fitted with fermentation trap in triplicate for six weeks. Changes in catechins, polyphenol and amino acid were investigated in weekly interval during the fermentation period. Total polyphenol contents of the samples were determined by Foilin Ciocalteu colorimetric method and catechins contents were determined by High-Performance Liquid Chromatography method whereas the total amino acid contents were determined by the Ninhydrin colorimetric method. Total polyphenol, total catechin and total amino acid contents of the initial sugar enriched tea infusion (in mg/100ml) were 425.21 ± 16.00 , 30.67 ± 0.24 and 4.46 ± 1.11 respectively whereas contents of the these constituents in tea wine at the end of the six weeks of fermentation (in mg/100ml) were 307.06 ± 7.77 , 28.86 ± 0.74 and 3.89 ± 0.06 respectively. Final product contained appreciable quantities of tea constituent known for therapeutic properties. Further, Tea wine contained significantly higher amount of total catechins (30.67 mg/100 mL) as compared to commercially available red wines (2.7 – 9.6 mg/100mL). Therefore, this rich chemical composition will be advantageous in marketing tea wine. Further, to make this investigation complete, studies on change in other important constituents such as caffeine, theaflavins and thearubins during tea wine fermentation will be required.

Keywords: Amino Acid; Catechins; Fermentation; Polyphenols; Tea Wine