DEVELOPMENT OF A LOW-CALORIE GREEN TEA BASED READY-TO-DRINK BEVERAGE USING BRAHMI (*Bacopa monnieri*), ASHWAGANDHA (*Withania somnifera*), STEVIA (*Stevia rebaudiana*) AND CEYLON CINNAMON (*Cinnamomum zeylanicum*)

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ABSTRACT

There is increasing demand for low-calorie functional beverages as consumers are becoming health conscious. Conventional ready-to-drink products consist of higher sugar content causing health issues. Green tea (*Camellia sinensis*) is known for various health benefits. Brahmi (*Bacopa monnieri*) and Ashwagandha (*Withania somnifera*) possess anti-stress, energy, and memory-boosting-like functional properties. Cinnamon (*Cinnamomum zeylanicum*) is having a pungent flavor and antimicrobial activity. Stevia (*Stevia rebaudiana*) is a natural non-calorific sweetener. Therefore, this research was conducted to develop a green tea-based sugar-free natural functional beverage using these herbal extracts. Green tea, Ashwagandha, Brahmi, and Stevia infusions were obtained by brewing in hot water. Cinnamon water extract was obtained by Soxhlet extraction. Several recipes were prepared with different combinations of above extracts and sensory properties were evaluated using nine point Hedonic scale by thirty untrained panelists. Results were statistically evaluated by Friedman test. Physiochemical properties of the selected recipe were evaluated and its keeping qualities were evaluated for one month against Sodium benzoate (0.1% w/v) as the positive control and sample without cinnamon as negative control. The selected recipe contained 0.2% of Green tea and Ashwagandha, 0.05% of Brahmi and Cinnamon and 0.14% of Stevia on the basis of soluble solid (g/100 ml). Changes in pH, titratable acidity, and total soluble solids of the cinnamon incorporated sample were very much similar to that of positive control. At the end of the storage period, its total plate count (6.6×10^2 CFU/ml) and yeast and mold count (5.2×10^1 CFU/ml) were less than the negative control (1.74×10^3, 3.9×10^2 CFU/ml respectively) and higher than the positive control (2.25×10^2,0 CFU/ml respectively). Total polyphenol content, DPPH scavenging activity (IC_{50}), pH, titratable acidity and total soluble solids content of the beverage were 59.68 ± 0.05 mg GAE/100ml, 126.23 ± 0.53 µg/ml, 6.36 ± 0.01, 0.488 ± 0.21%, 0.7 ± 0.021 respectively. With appreciable physicochemical, organoleptic, and keeping qualities, the developed green tea-based Ready-to-Drink beverage will be a healthy alternative. Analysis of chemical compounds which contribute to the functional properties will be useful to confirm the health benefits of the product.

Keywords: Ashwagandha; Brahmi; Cinnamon; Green tea; Ready -to-drink; Stevia