(ID 012)

Development of Protein Rich Ready to Serve Drink by Incorporating Whey in Wood Apple (*Limonia acidissima)*

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Abstract

Whey is a by-product of the dairy industry, obtained during the manufacture of cheese, paneer, or similar products by separation from curd after the coagulation of milk. Whey contains almost all the nutrients of milk except casein and fat, thus making it highly nutritious. Whey is commonly disposed of as waste in many countries. However, it is hazardous to dispose of whey directly into the environment because several toxic substances are formed during the decomposition of whey, which can have several harmful consequences for the environment. The production of a ready-to-serve drink by combining whey and fruit juice for human consumption has been shown to have good commercial potential and also reduce the issues related to waste disposal. Therefore, a study was designed to incorporate different proportions of whey into wood apple (*Limonia acidissima*) pulp with the aim of developing a protein-rich, ready-to-serve drink. In the first trial, ready-to-serve drinks were prepared by incorporating different ratios of (0%,10%, 20%, 30% and 40%) whey into wood apple pulp. Then, the second trial was conducted by incorporating various ratios of (30%, 40% and 50%) whey into wood apple pulp. Based on the results of sensory analysis using 5-point hedonic scale, 40% of whey incorporated with 60% wood apple pulp ready-to-serve drink was selected for further studies along with a control (100% wood apple pulp). Then, physicochemical, and nutritional properties of raw materials and selected ready-to-serve drink and control were evaluated. According to this analysis, whey is a good source of protein (13.31±0.02%), ash (8.74±0.03%) and phosphorous content (995.16±4.14 mg/100 g). Then, shelf-life studies were also carried out, and it reported ready-to-serve drinks can be stored for 60 days without a significant increase in microbial content with the addition of SMS at 50 ppm. The cost of production of the whey-incorporated drink (89 rupees/1000 g) is comparatively lower than the control (129 rupees/1000 g). Therefore, it can be concluded that whey can be incorporated in wood apple pulp up to the ratio of 40:60 to prepare ready-to-serve beverages that have reasonable amounts of minerals, vitamins, and high-quality protein, which will be acceptable to consumers, and may solve the issue of waste disposal of whey.

***Keywords**:* Ready-to-serve drink, Waste management, Whey, Wood apple