

Quality Characteristics of Probiotic Milk Incorporated with Stevia (*Stevia rebaudiana*) Leaf Extract Powder as Natural Sweetener

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Probiotic milk is a popular fermented dairy product. *Stevia rebaudiana*, leaves can be used to extract zero-calorie sweetener, which also has antioxidant and anticancer properties. The present study was done to develop value-added probiotic milk by incorporating stevia leaf extract powder and assess its quality parameters. Stevia leaf extract powder (SLEP) was prepared by hot water extraction (85°C/2 hrs) of stevia leaves filtration, rotatory evaporation, treatment with ion exchange resin followed by spray drying. Probiotic milk was prepared with 0.2% (w/v) *S. thermophilus* culture and different levels of SLEP and sugar at ratios of 0:5, 0.2:4, 0.4:3, 0.6:2, 0.8:1, 1:0. Stevia leaf extract powder was analyzed for moisture, fat, protein, total phenolics, total flavonoids, antioxidant activity, and soluble sugar content using gravimetric, soxhlet, kjeldhal, Folin-Ciocalteu (FC), AlCl₃, 2,2-diphenyl-1-picrylhydrazyl (DPPH) and phenol sulfuric methods, respectively. Sensory evaluation was conducted using a 9-point hedonic scale and 30 untrained panelists to select the best treatment. Probiotic milk with 0.4% (w/w) SLEP and 3% sugar was chosen as the best treatment during the sensory evaluation. The selected treatments were tested for pH, antioxidant activity, Brix value, microbial quality (*E. coli*, yeast, and mold), and total plate count against the control at a 7-day interval during 28 days of refrigerated storage (4°C). Further crude fat, crude protein, and soluble sugar were analyzed for the probiotic milk samples. Results revealed that probiotic milk with 0.4% (w/w) SLEP had higher ($p < 0.05$) antioxidant activity (58.24%) and lower ($P < 0.05$) soluble sugar contents compared to that of the control, which contained 0.4% SLEP and 3% sugar. *S. thermophilus* counts were not affected by the addition of SLEP. *E. coli*, yeast and mold were absent in all samples. It was concluded that stevia leaf extract powder can be used to replace sugar up to 3% in probiotic milk.

Keywords: Probiotic milk, Stevia leaf extract powder, Antioxidant, Microbial, Sensory