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Use of stevia as a non-caloric natural sweetener in omega-3 enriched cow and buffalo milk yoghurt

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Cow and buffalo milk yoghurts contain stevia (*Stevia rebaudiana*) as a non-caloric natural sweetener and omega-3 fatty acid as a fat replacer. Sweetening power of stevia was compared to that of sugar by adding stevia into 100 cm^3 of defatted (3.0%) milk so that 0.1 % of stevia was incorporated into the yoghurts. 0.4% of a masking flavor was selected to mask the aftertaste given by stevia. In addition, a combination of 0.06% stevia and 4% sugar was selected. Flax seed oil (0.5%) was selected as an omega-3 source in defatted milk. Both stevia and flax seed oil incorporated cow and buffalo milk yoghurts were compared with commercial and blank yoghurts of each milk type through a sensory panel. Proximate composition (total solid (TS), fat, protein, milk solid non-fat and ash), physical qualities (pH, acidity and texture), microbial parameters (*E.coli* and yeast) and omega 3 content were analyzed in the selected yoghurt according to the AOAC (1999), SLS 516 guidelines and GC-MS. According to Kruskal-Wallis sensory evaluation test, the best combination of cow milk yoghurt was with 4.8% skimmed milk powder, 0.4 ml masking flavor, 0.06 g stevia, 4 g sugar and 0.5 g flax seed oil in 100 ml of cow's milk. The best buffalo milk yoghurt mixture was with 9.7% skimmed milk powder with the same quantities of other ingredients as in the cow's milk yoghurt mixture. Results of the proximate analysis revealed that 24.42%, 24.24% TS, 6.23%, 7.26% protein, 3.04%, 3.23% fat, 16.03%, 17.62% MSNF, 0.72%, 0.92% ash and 0.0994%, 1.008% omega-3 fatty acid were contained in cow and buffalo milk yoghurts respectively. Proximate analysis revealed that commercial yoghurt contained 21.54% TS, 3.50% protein, 3.0% fat, 11.34% MSNF and 0.63% ash. No *E. coli*, mould and yeast counts were recorded. The pH of 5.17 - 4.77 and 5.21 - 4.83 and acidity of 0.765 - 0.945% and 0.747 - 0.972% in both cow and buffalo milk were within the acceptable range according to SLSI standards. Therefore, buffalo milk, like cow milk, can be considered as a suitable source for preparing yoghurt. Sweetness and fat content can be replaced by stevia and flax seed oil with effective masking methods in both yoghurt types. Protein, MSNF and ash content were high in both types of yoghurts when compared to commercial yoghurt.

Keywords: Stevia, cow milk, buffalo milk, omega-3 fatty acid