EFFECT OF SOURSOP, SWEETSOP AND CUSTARD APPLE ON PROBIOTIC AND ANTIOXIDANT ACTIVITY OF SET YOGHURT

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Functional foods impart desirable physiological effects beyond basic nutrients. In this study, novel set yoghurts were developed using three different Annona varieties, soursop (*Annona muricata*) [SOY], sweetsop (*Annona squamosa*) [SWY] and custard apple (*Annona reticulata*) [CAY]. The effect of incorporation of these fruit pulp at a level of 10% (w/v) on physicochemical, microbiological, sensory and antioxidant properties [AP] of set yoghurt was evaluated. Yoghurts were produced by inoculating with standard working yoghurt cultures and *Bifidobacterium animalis* ssp. *lactis* Bb 12 at the level of 1% (v/v).The antioxidant properties of fruit yoghurts [FY] compared to control yoghurt (no fruit pulp) were evaluated using total phenolic content [TPC] and ferric reducing antioxidant power [FRAP] using *in vitro* assays. The titratable acidity [TA], pH, syneresis, yeast and mold counts were analyzed weekly for 28 days of expected shelf life. Viable count of yoghurt cultures and *B. bifidum* of yoghurt samples at 1, 7, 14, 21 and 28 days at cold storage (4 $^{\circ}$C) were selectively enumerated to evaluate the prebiotic effect. The pH of FY was significantly lower ($p<0.05$) and TA was significantly higher ($p<0.05$) than the control until 28th day of storage. The FY, except for CAY, showed significantly higher ($p<0.05$) syneresis compared to the control throughout the shelf life. Yeast (<1000 cfu/g) and mold (<1 cfu/g) counts were within the acceptable level over the storage period. The FY showed significantly higher ($p<0.05$) amounts of AP compared to control. FY also demonstrated significantly higher ($p<0.05$) level of steady probiotic count than the recommended therapeutic minimum of 10^6 cfu/ml over 28 days of shelf life, while the control showed a significant ($p<0.05$) reduction after 21st day of storage. According to the TPC assay, SWY contained significantly higher ($p<0.05$) AP compared to the other yoghurts. The CAY showed significantly higher ($p<0.05$) AP compared to SWY and control in FRAP assay. The SOY showed the best sensory properties followed by SWY and CAY. All three fruits tested in this study enhance the growth of probiotic strains and improve the antioxidant properties of set yoghurt.

Keywords: Antioxidants, Fruit yoghurt, Prebiotics, Probiotics