Effect of Cow Milk and Goat Milk on Growth and Survival of *Bifidobacterium animalis in* Presence of Bee Honey

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Bifidobacterium animalis is a probiotic bacteria which have been incorporated into fermented dairy products due to their reported health benefits. The fastidious behavior of Bifidobacteria, makes it difficult to obtain legally required counts of probiotic bacteria in a probiotic milk product. This study was conducted to evaluate the effect of cow milk and goat milk on enhancement of growth and survival of *B. animalis* (Bb-12) in the presence of bee honey in a yoghurt beverage. Yoghurt beverages were prepared from cow milk or goat milk using 5% (v/v) single strain Bb-12 starter culture and different concentrations of honey (2, 3 and 5% (v/v)), without adding sugar. Commercial fructooligosaccharides (FOS) (5%) and table sugar (5%) added yoghurts were used as the positive controls while no any sugar or FOS added yoghurts were used as negative controls. All yoghurts were incubated at 37°C for 12 hours. Enumeration of Bb-12 was done by pour plating on MRS agar supplemented with 0.05% L-cysteine-HCl, followed by anaerobic incubation at 37°C for 48 hours. Viability of Bb-12 during 28 days of refrigerated storage at 4 °C, were assessed at 7 day intervals. Sensory evaluation, proximate, chemical and microbial analysis were conducted to determine the suitability and acceptability of the product. Bee honey showed enhanced bifidobacteria growth in both types of milk compared to controls. Growth promotion effect of honey on Bb-12 was maximized at honey concentration of 5% in cow milk and 3% in goat milk. Among them significantly higher ($P<0.05$) growth of Bb-12 was resulted in goat milk compared to cow milk. Survival of Bb-12 was significantly higher in honey added beverages compared to controls up to 14 days of storage (4°C). The pH values of honey incorporated goat milk beverages were significantly lower ($P<0.05$) compared to cow milk incorporated with honey. Overall, the effect of goat milk on growth and survival of Bb-12 was enhanced in presence of honey ($>10^6$ bifidobacteria /g).

Keywords: Goat milk, cow milk, bee honey, bifidobacteria, prebiotic