Development of Garlic *(A ilium sativum L.)* Incorporated Synbiotic Butter

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Today consumers are looking for health beneficial synbiotic food products which contain both prebiotics and probiotics in order to prevent non-communicable diseases. Inulin is a prebiotic naturally and abundantly occurs in Garlic. Synbiotic butter with Garlic should be a new value added product concept to the Sri Lankan market. This study was conducted to develop garlic incorporated synbiotic butter and investigate the effect of garlic incorporation on survival of *Bifidobacterium animalis* subspecies *lactis* (Bb12) probiotic strain during long term refrigerated storage. Lyophilized garlic powder (LGP) was prepared using garlic bulbs and analyzed for its chemical composition. FTIR analysis was done for LGP and commercial chicory inulin to identify the presence of inulin. LGP was incorporated into butter at levels of 0%, 2%, 4%, 8% and 10% (w/w), while 5% (w/w) commercial chicory inulin incorporated butter was used as positive control. *B. animalis* 6% (v/v) was inoculated to cream (40% fat) before churning to ensure final count of $>10^6$ cfulg. Viability of Bifidobacteria during 28 days of storage at 6°C was assessed at 7 day intervals. Bifidobacteria enumeration was carried out by pour plating on MRS media supplemented with 0.05% L-cysteine followed by anaerobic incubation. Sensory characteristics, proximate analysis, physico-chemical and microbiological parameters were analyzed in all six butter samples. FT-IR spectrums confirmed the presence of inulin in LGP. The highest scores in the sensory assessment were obtained by 10% garlic powder incorporated butter. Results of chemical (pH, titratable acidity, peroxide value) and microbiology analysis *(E. coil* count) were not deviated from SLS specifications for butter. In all samples viability of Bifidobacteria was increased up to 14 days of storage, and then reduced during 28 days of shelf life. The Bifidobacteria count (cfu/g) was increased with increasing garlic percentage compared to negative control sample (0% garlic), indicating that the prebiotic compounds in garlic such as inulin may have enhanced the growth of probiotic bacteria. The results concluded that garlic can be successfully used as a prebiotic source in synbiotic butter.

Keywords: Bifidobacteria, Bb12, Synbiotic, Butter