

STABILITY AND QUALITY CHARACTERIZATION OF PROBIOTIC ENRICHED STIRRED YOGHURT WITH NATURAL PLANT COLORANTS

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Colour is one of the key sensory attributes of food quality. Recently, a trend for replacing artificial colourants with natural colouring agents have emerged. Hence, the use of natural colourants and their impact on product quality is of great concern. The study evaluated colour stability and the effect of using aqueous plant extracts in volume basis as 10% Hibiscus: *Hibiscus rosa-sinensis* L., 4% Turmeric: *Curcuma longa* L., 6% Spinach: *Spinacia oleracea* L. and 4% Blue pea: *Clitoria ternatea* in stirred probiotic yoghurt's physicochemical and sensory properties. *Bifidobacterium bifidum* inoculated yoghurts were prepared in triplicates and compared with the control over the 14 days of storage at 4°C. Adding plant materials resulted in varying pH, syneresis, flowability, colour (L*, a*, b*), crude protein and total phenolic content (TPC). An increase of L* value on the 14th day was observed in all samples, indicating deterioration of colour pigments over the storage. The significantly ($p < 0.05$) highest (69.14 µg GAE mL⁻¹) and lowest (46.49 µg GAE mL⁻¹) TPC was observed in spinach and blue pea, respectively at the beginning of the storage. However, on the 14th day, turmeric incorporation resulted in the highest TPC (72.6 µg GAE mL⁻¹). The microbial analysis confirmed the viability of probiotics (>9 log CFU mL⁻¹) in all yoghurts over the storage within acceptable levels (>6 log CFU mL⁻¹). Probiotic stirred yoghurt with turmeric scored the highest sensory ranking for colour, and the overall acceptability while spinach ranked the lowest in flavour at the end of the storage. Further, all studied natural plant colourants have no observed sedimentation over the storage. Hence, considering the propriety of both observed physicochemical and sensory results, present study, affirmed the suitability of all used natural extracts in producing probiotic stirred yoghurt.

Keywords: Fermented milk, Natural plant colourants, Organoleptic quality, Stirred prob