Incorporation of Plant Based Gelling Agents as the Stabilizer to Replace Gelatine in Set-yoghurt

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Abstract: Yoghurts were prepared with incorporating pea fibre, "*Kitul*" flour, carrageenan and alginate as stabilizers to determine the best replacer for gelatine. They were organoleptically evaluated and stored at 7±1°C. Further the yoghurt were examined for colour and texture as physical properties and were subjected to chemical analyses such as pH, titratable acidity (TA) and water holding capacity (WHC) for 9 days with a three days interval. Colour attributes of prepared yoghurts were measured using a colour reader, which gives L*, a* and b* values directly. Texture profile and the gel strengths of the samples were measured using a digital penetrometer which was coupled to a dynometer with a load cell of 5kN and cross head speed of 1 mm/s and equipped with a 1.27 cm flat faced cylindrical Teflon® plunger. Maximum force needed to cut the surface of the sample was determined. Enumeration of lactic acid bacteria (LAB) and Coliforms were done in order to compare the microbiological properties of yoghurts. Pea fibre and 0.5% of pea fibre (out of 0.5%, 0.6%, 0.7%, 0.8% and 0.9% incorporation levels) stabilised yoghurts were rated best based on the sensory evaluations as the best replacer for gelatine while being the most suitable level of incorporation. In pH and TA, there was a significant difference between all the treatments and the length of storage. WHC values were significantly different between treatments and "*Kitul*" flour obtained the highest WHC at 6th day. Lowest L* highest a* and lowest b* values ($p<0.05$) were obtained from "*Kitul*" flour added yoghurts. Carrageenan obtained the highest ($p<0.05$) score for gel strength and in the texture analysis of yoghurts carrageenan incorporated yoghurts received the highest score. In the viability counts of LAB, there was a significant difference between all the treatments and the length of storage. Pea fibre 0.5% added yoghurts were free from Coliforms. Results from the present study suggests pea fibre as the probable alternative stabilizer for gelatine and 0.5% of pea fibre as the best incorporation level in set-yoghurt preparation in order to obtain proper sensory and rheological properties to be accepted by consumers.

Keywords: Alginate, Carrageenan, "*Kitul*" flour, Pea fibre, Rheological properties, Yoghurt