Development of Gelatin Free-Set Yoghurt with Seaweed Phycocolloids

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This study was conducted to evaluate the potential use of seaweed phycocolloids as stabilizers in gelatin-free set yoghurt. Three seaweed phycocolloids namely carrageenan, alginate, and agar-agar were extracted from *Kappaphycus alvarazii*, *Sargassum wightii* and *Gracilaria Salicornia*, respectively. Preliminary trials were conducted to select the best incorporation levels of phycocolloids in yoghurt, and the selected levels were 0.12% (w/v) carrageenan, 0.2% (w/v) alginate and 0.3% (w/v) agar-agar. These levels were selected based on the syneresis percentage. The hardness, color, proximate composition, and sensory properties of yoghurt containing selected levels of phycocolloids were assessed in comparison with a yoghurt containing gelatin (0.8% w/v). All the phycocolloids incorporated yoghurt showed lower hardness and yellowness than gelatin yoghurt. Carrageenan yoghurt had significantly ($P<0.05$) higher protein and fat contents than gelatin yoghurt. Alginate yoghurt showed similar protein content as gelatin yoghurt but had a significantly ($P<0.05$) lower fat content. Incorporation of agar-agar significantly ($P<0.05$) decreased protein content and increased fat content. The alginate incorporated yoghurt scored high for overall acceptability. The yoghurts were stored at a refrigerated temperature (4 ℃) for 14 days and physicochemical parameters (pH, titratable acidity, syneresis) were analyzed on days 1, 7 and 14. There was no significant ($P>0.05$) difference in pH among treatments during storage period. Alginate yoghurt showed significantly ($P<0.05$) lower acidity on days 1, 7 and 14 than gelatin yoghurt. All phycocolloids incorporated yoghurt had significantly ($P<0.05$) higher syneresis throughout the storage period. There was no significant ($P>0.05$) difference in lactic acid bacteria count in yoghurt on day 1 while their count in phycocolloids incorporated yoghurt was significantly ($P<0.05$) higher on days 7 and 14. This study revealed that agar-agar, carrageenan, alginate from seaweeds can be used as stabilizers in set yoghurt, and incorporation of 0.2% alginate can even improve the sensory properties of yoghurt.

Keywords: Agar, Alginate, Carrageenan, Set-yoghurt, Stabilizer

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