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Production of new conjugated polymer through maillard reaction between durian seed gum (DSG) and whey protein isolate (WPI)

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Abstract

Polysaccharide gums are mostly complex hydrophilic polymers, which exhibit relatively poor interfacial activity in oil in water emulsion. There is a possibility to enhance this interfacial emulsifying activity through simple mixing, coacervation or conjugation process with an appropriate protein. In this study, the purified durian seed gum (DSG) was conjugated with whey protein isolate (WPI) through Millard reaction caused by dry heating. Before conjugation process, DSG and WPI were mixed by a ratio of 3:1 (w/w), then dissolved in distilled water and lyophilized by a freeze dryer. Then, the lyophilized sample was incubated at 60 °C and relative humidity of 80% (±1%) for 48h. The aim was to form the covalent linkage between DSG and WPI through Maillard reaction. In this study, the emulsifying characteristic of WPI-conjugated DSG were compared with several commercial gums (i.e. Arabic gum (AG), sodium alginate (SA), kappa carrageenan (KC), pectin (P) and guar gum (GG)). In this study, DSG-WPI conjugate and AG induced lower viscosity than other gums. The results showed that the emulsion containing DSG-WPI conjugate exhibited more reliable stability than the emulsion stabilized by SA, KC, GG, and pectin. This might be due to a thicker oil-water interface caused by WPI, thus inducing better stability than DSG alone.

Biography

Associate Professor Dr. Hamed Mirhosseini hold his PhD from University Putra Malaysia at the age of 28 and immediately jointed to the same faculty as post doc fellow researcher and senior lecturer at 2008. He managed to publish more than 25 papers in reputed journals and serving as an editorial board member of repute.