

Suitable coating material for microencapsulation of spray-dried fish oil

ABSTRACT

This study was conducted to screen the most suitable coating material for the production of microencapsulated fish oil powder using ternary blends of maltodextrin (15, 25 % w/w), Arabic gum (2.5, 7.5 % w/w), and methylcellulose (0.5, 1.5 % w/w). The physical properties of fish oil emulsion and encapsulated powders were evaluated. Arabic gum (5 % w/w) showed the most significant ($p < 0.05$) effect on the surface mean diameter of the droplets in the emulsion. Maltodextrin had the most significant ($p < 0.05$) effect on the centrifuge stability of the emulsion and the amount of surface oil of the powder at 15 and 20 % (w/w) respectively, whereas methylcellulose (0.5 % w/w) had the most significant ($p < 0.05$) effect on the width distribution of the droplets in the emulsion. The total optimal area leading to the formation of coating material with desirable physical properties was expected to be obtained by the combination of 16 % (w/w) maltodextrin, 6.5 % (w/w) Arabic gum, and 0.88 % (w/w) methylcellulose respectively.

Keyword: Arabic gum; Fish oil; Maltodextrin; Methylcellulose; Microencapsulation; Spray-drying