Divya Eratte et al., J Nutr Food Sci 2016, 6:6 (Suppl)
http://dx.doi.org/10.4172/2155-9600.C1.029

Evaluation of *in vitro* digestion of co-microencapsulated probiotic bacteria and omega-3 oil in whey protein isolate-gum Arabic complex coacervates

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Co-microencapsulated omega-3 rich tuna oil (O) and probiotic bacteria *L. casei* (P) powder was produced using whey protein isolate (WPI)–gum Arabic (GA) complex coacervate wall matrix system. The release behavior of co-microencapsulated omega-3 oil and viability of co-microencapsulated probiotic bacteria were carried out to understand its applicability as a controlled release delivery system. The *in vitro* digestibility of co-microcapsules (WPI-P-O-GA) and microcapsules (WPI-P-GA and WPI-O-GA) on sequential exposure to simulated salivary fluid (SSF), simulated gastric fluid (SGF) and simulated intestinal fluid (SIF) were examined. Co-microencapsulation increased the survivability of *L. casei* during simulated digestion. Surface hydrophobicity of co-microencapsulated *L. casei* was greater than that of microencapsulated *L. casei* indicating greater intestinal adhesion. However, there was no significant difference in the assimilative reductions of cholesterol by microencapsulated and co-microencapsulated *L. casei*. There was no significant influence observed on the release properties of omega-3 oil due to co-microencapsulation. However, the total omega-3 fatty acids in the released oil during *in vitro* digestion were found to be higher, when co-microencapsulated. Hence, the co-microencapsulation could protect the *L. casei* in delivering the viable cells and omega-3 oil to human intestine without any significant adverse effect on their functionalities and properties.

Biography

Divya Eratte is working as Faculty of Science and Technology, Federation University Australia, Ballarat, VIC 3353, Australia. Her experience includes various programs, contributions and participation in different countries for diverse fields of study. Her research interests reflect in her wide range of publications in various national and international journals.

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