chromatographic fractionation and their structural characterization by extensive spectroscopic experiments. Anti-inflammatory and antioxidative characteristics of isolated polyketides were determined by in vitro anti-cyclooxygenase/lipoxygenase and radical scavenging assays, respectively. Compound 3 displayed comparatively greater 2,2-diphenyl-1- picrylhydrazyl radical quenching potential (50% inhibitory concentration, IC_{50} ~0.59 mg/mL) than commercially available *α*-tocopherol (IC_{50}- 0.63 mg/mL). The titled compounds demonstrated comparable 5-lipoxygenase inhibition potential (IC_{50} 0.76-0.92 mg/mL) to non- steroidal anti-inflammatory agent, ibuprofen (IC_{50} 0.93 mg/mL), which established that the polyketides can be used as novel anti-inflammatory leads in the functional food supplements. These results confirmed that polyketides can be considered as a good alternative to synthetic antioxidants in food systems.

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Synthesis of protein-polysaccharide coated squalene – physico-chemical characterization and functional food application

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Microencapsulation is a promising technology that confers better oxidative stability and improved shelf life to thermolabile biomolecules for fortification in food systems. In the present study, encapsulation of squalene in protein-polysaccharide complex has been attempted. A stable emulsion formulation was optimized based on the effects of pH and chitosan concentration with whey protein as major emulsifier (10%). The optimized emulsion formulation was then spray dried and characterized physically and chemically. The encapsulation efficiency of the squalene powder was found to be 78 ± 0.6 % whereas other properties such as particle size, zeta potential, water activity, hygroscopicity, Carr Index, Hausner ratio showed satisfactory results. The polydispersity index (PDI) of the encapsulated squalene was found to be 0.536. The larger PDI indicates that the particles have a heterogeneous nature. SEM analysis showed that the squalene microcapsules were spherical in shape without apparent cracks and fissures. FTIR data further confirmed the encapsulation of squalene with chitosan-whey protein complex. From TGA analysis, it was clear that the chitosan-whey protein complex was able to retain the thermal stability of squalene up to 422°C. The oxidative stability studies revealed that the product remained oxidatively stable even after a storage period of more than three months. Functional food application of the microencapsulated squalene was then attempted by fortifying it in a bakery product (cake). It was found that the cake enriched with microencapsulated squalene had better oxidative stability, sensory attributes, textural quality than that of the cake enriched with pure squalene and control treatment. Hence, it can be concluded that emulsification of squalene in protein-polysaccharide complex and its encapsulation by spray drying can be a potential process to produce oxidatively stable squalene microcapsule suitable for the development of shelf stable functional foods.