

Preparation and characterisation of nanoliposomes containing winged bean seeds bioactive peptides

ABSTRACT

The aim of this study was to produce and characterise nanosize liposomes containing bioactive peptides with antioxidative and ACE-inhibitory properties, derived from winged bean seeds (WBS) protein. WBS powder was papain-proteolysed, at 70 °C and pH 6.5 for six hours, followed by encapsulation via a solvent-free heating method. The results showed that the WBS proteolysate was successfully incorporated into spherical, unilamellar liposomal particles, with particle diameter, polydispersity index, zeta potential and encapsulation efficiency of 193.3 ± 0.12 nm, 0.4 ± 0.02 (unit less), -70.5 ± 0.30 mV and $27.6 \pm 1.17\%$, respectively. It also demonstrated good storage stability over eight weeks at 4 °C, indicated by slight increment (15.1%) in particle size and a zeta potential only weaker by 17.2% at the end of the study period. These results suggested the feasibility of entrapping water soluble peptides in hydrophobic liposomal system that, upon optimisation, has the potential to act as bioactive food ingredient.

Keyword: ACE inhibitory activity; *Psophorcarpus tetragonolobus* (L.) DC; Antioxidative activity; Enzymatic hydrolysis; Nanoliposome characterisation