

Curcumin-loaded liposomes prepared from bovine milk and krill phospholipids: Effects of chemical composition on storage stability, in-vitro digestibility and anti-hyperglycemic properties

ABSTRACT

Present study prepared curcumin liposomes with high encapsulation efficiency (>70%) using bovine milk and krill phospholipids; and investigated the effects of phospholipids composition on storage stability, in-vitro bioavailability, antioxidative and anti-hyperglycemic properties of the curcumin liposomes. Curcumin liposomes prepared from bovine milk phospholipids have smaller particle sizes (163.1 ± 6.42 nm) and greater negative zeta potentials (-26.7 mv) as compared to that prepared from krill phospholipids (particle size: 212.2 ± 4.1 nm, zeta potential: -15.23 mv). In addition, curcumin liposomes from bovine milk phospholipids demonstrated better stability under harsh storage conditions (alkaline conditions, oxygen, high temperature and relative humidity). Nevertheless, curcumin-loaded liposomes prepared from bovine milk phospholipids have inferior bioavailability compared to that prepared from krill phospholipids. No significant differences can be observed in terms of anti-oxidative and anti-hyperglycemic properties of liposomes prepared from both bovine milk and krill phospholipids. Findings from present study will open up new opportunities for development of stable curcumin liposomes with good functional properties (high digestibility, bioavailability and pharmacological effects).

Keyword: Curcumin liposome; Phospholipids; Storage stability; In-vitro digestibility; Anti-oxidative; Anti-hyperglycemic