
Assessment of glucose-lowering activity of *Cassia auriculata* L. extracts encapsulated nanoliposomes

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Glucose-lowering activity of *Cassia auriculata* L. (Ranawara, Family: Fabaceae) flowers is scientifically proven. However, it has limited use as therapeutic agents due to drawbacks including reduced absorption and stability. This study aimed at optimization and screening of *C. auriculata* encapsulated nanoliposomes using high-fat diet fed, streptozotocin induced diabetic Wistar rat model. *C. auriculata* flowers were extracted using water, ethanol and aqueous ethanol 70% v/v by ultrasonication (40 °C, 40 kHz, 30 min). The dried extracts were encapsulated in nanoliposomes. The glucose-lowering activity of optimized nanoliposomes was determined by oral glucose tolerance test (OGTT, 3 g/kg) in diabetic rats. The results were evaluated using the total area under the OGTT curve (TAUC). Optimum encapsulation efficiency and loading capacity of water, ethanol, aqueous ethanol 70% v/v extracts encapsulated nanoliposomes were observed at 3, 6 and 6% w/v loading concentrations respectively. The optimized extracts encapsulated nanoliposomes at the selected doses (45, 60 and 30 mg/kg) showed percentage reduction of TAUC as 13.89 (p= 0.032), 13.25 (p= 0.04) and 1.4 (p= 0.808) respectively compared to diabetic control rats. However, a significant reduction of TAUC (11.63%) (p= 0.05) compared to unencapsulated extract at the respective dose was shown only for water extract encapsulated nanoliposomes (WENL). Particle size and zeta potential of the WENL nanoparticles were 494.53 ± 1.15 nm and -17 ± 2.63 mV. In conclusion, nanoencapsulation improved the glucose-lowering activity of *C. auriculata* water extract. The variation of TAUC among nanoliposomes is associated with the varying polarities of encapsulated secondary metabolites interacting with the nanoliposome system.

Keywords: *Cassia auriculata* L., Diabetes mellitus, Nanoliposomes

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