

ABSTRACT

Curcumin has long been known for its potential health benefits, including antioxidants, anti-inflammatory properties, and potential protection against chronic diseases such as heart disease, cancer, and Alzheimer's. Curcumin still has disadvantages, namely low bioavailability properties such as low chemical stability, low solubility in water media, and low adsorption. So it is necessary to encapsulate curcumin in liposomes as an efficient delivery system. The addition of didodecyldimethylammonium bromide (DDAB) makes liposomes cationic which has biocompatibility and low immunogenicity. This study aims to isolate phospholipids from sesame seeds and compare the effect of adding DDAB on the efficiency of curcumin encapsulation in asolectin liposomes using UV-Vis spectroscopy analysis.

This research methodology consists of three stages. The first stage is making a standard curve and making a phosphate buffer saline (PBS) pH 7.4. The second stage is encapsulation of curcumin in asolectin liposomes with the addition of DDAB using a thin layer hydration method with varying concentrations of curcumin 10, 20, 30, 40 mg/L. The final stage is determining the encapsulation efficiency value using the UV-Vis spectrophotometry method.

The research results showed that 0.8945 g of phospholipids from isolated sesame phospholipids were produced from 5.048 kg of dry sesame. The percent yield obtained was 0.0177%. The results of the research prove that the phospholipid asolectin can be used to encapsulate curcumin with the result being a yellow solution containing orange liposome precipitates. The results of the encapsulation efficiency of curcumin without DDAB at a concentration of 20 mg/L decreased by 2.28% after adding DDAB. In encapsulating curcumin without DDAB at a concentration of 30 mg/L, the encapsulation efficiency value increased by 0.74% after adding DDAB. This shows that the addition of DDAB can affect changes in the value of curcumin encapsulation efficiency.

Keywords: curcumin, asolectin, cationic liposomes, didecyldimethylammonium bromide