LARGE UNILAMELLAR VESICLES SANDWICHED BY CHITOSAN AS VACCINE VEHICLE

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Chitosan, α- (1-4)-amino-2-deoxy-β-D-glucan, is a deacetylated chitin, a polysaccharide from crustacean shells. Its unique characteristics such as positive charge, biodegradability, biocompatibility, non-toxicity, and rigid structure make this macromolecule ideal for oral vaccine. Reverse phase evaporation vesicles (REVs) can be sandwiched by chitosan (Chi). Here we present these particles as vehicle for Diphtheria toxoid (Dtxd). Briefly, the Dtxd in 0,5 % chitosan (in 200 µL of 10 mM acetate, pH 4,3 containing or not 400 mM trehalose) was added to 60 mg of soy phosphatidylcholine and 10 mg of cholesterol dissolved in 10 mL of ethyl acetate. After micelle formation, by sonication, the organogel was formed in a rotatory evaporator under vacuum (15 mm Hg/cm). The organogel was resuspended in 1% PVA. Round chitosan-sandwiched particles (REVs-Chi) of 373 ± 17 nm containing 35,89 % Dtxd (trehalose free) or 64,23 % (with trehalose) were obtained. We observed that trehalose and liofilization retarded the protein liberation during the observed time (0 - 240 minutes). The controlled release effect was higher after 240 minutes of incubation when 79 % encapsulated Dtxd (trehalose free) was liberated from REVs-Chi in contrast with 19 % REVs–Chi containing trehalose. We concluded that this new vehicle controls solute liberation and can be formulated for oral vaccines.
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