



Liposome Formulation of Soybean Phosphatidylcholine Extract from Argomulyo Variety Soy to Replace the Toxicity of Injectable Phosphatidylcholine Solution Containing Sodium Deoxycholate

¹Reza Y. Purwoko, ^{1,2}lis Rosliana, ²Ernie H. Purwaningsih, ³Chaidir, ⁴Hans-Joachim Freisleben, ⁵Jeanne A. Pawitan⁶

¹Biomedical Science Doctoral Program, Faculty of Medicine, Universitas Indonesia

²érpour Medical-Spa Skin and Mesotherapy Centre, Jakarta

³Department of Pharmacy, Faculty of Medicine, Universitas Indonesia

⁴Agro Industrial Technology Development Biomedical Laboratory, Serpong, South Tangerang

⁵Medical Research Unit, Faculty of Medicine, Universitas Indonesia

⁶Department of Histology, Faculty of Medicine, Universitas Indonesia

Abstract: Subcutaneous injection lipolysis using phosphatidylcholine (PC) and sodium deoxycholate (SD) solution has been used in clinical practice with toxicity concerns of SD, a detergent emulsifier. Liposomal formulation of PC from local Indonesian soybean without SD was thought to be a safer alternative for this purpose.

The aim of this study was to develop injectable liposome formulations from soybean phosphatidylcholine (SPC) extract from Argomulyo variety soy. In addition, this study was aimed to compare the physical characteristics between the liposomes of SPC extract and the liposomes of purified SPC.

SPC extract was obtained by extraction-fractionation process from soybean powder. Liposome was prepared using thin film hydration (hand-shaking) method followed by a stepwise extrusion process through decreasing pore size extruder, i.e. 0.45 μm , 0.20 μm , and 0.10 μm . Liposomes were then characterized physically and microscopically. Laser scanning confocal microscopy (LSCM) with quinacrine dye and transmission electron microscopy (TEM) without quinacrine dye was used for morphological confirmation.

The median size of liposomes from SPC extract containing 26.2% of PC was 48.9 nm with polydispersity index of 0.35. The liposomes were anionic with mean zeta potential of -17.25 mV. Liposomes from purified SPC was larger with median size of 68.3 nm and polydispersity index of 0.16; the liposomes were cationic with mean zeta potential of 58.23 mV. Confirmation using TEM showed spherical structures covered with a single layer both from purified SPC and SPC extract.

Liposomes of SPC extract could satisfyingly be produced using local, Argomulyo variety soy. The liposomes were uniformly small, nanoparticle-sized, unilamellar, and negatively charged. These characteristics are suitable for subcutaneous injection to be used as lipolytic agent to replace the commercial PC plus SD solution.

Key words : lipolysis injection, liposome, soybean phosphatidylcholine, soybean lechitin.