Inkorporasi metilprednisolon palmitat pada membran liposom yang mengandung tetraeter lipid berasal dari archaea serta gambaran distribusinya di beberapa organ limfoid pada mencit

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Abstrak

This study is proposed to solve the main problem in the first experiment which has the pitfall of the incorporation of methylprednisolone (MPL) into liposome's membrane. The liposomal-methylprednisolone (L-MPL) has already been formulated by Mishina, et at31.32 and experimented on several studies of organ transplantation in rat, successfully. But, all procedures even using other combination and ratio of lipids are irreproducible methods. The pitfall of the incorporation of MPL into liposome's membrane is caused by the micelle formation of MPL.

To reduce or may be to inhibit the micelle formation of MPL that usually formed spontaneously when it is dispersed in aqueous media, the reactive -OH group at C21 position should have been esterified with palmitate to enhance the lipophilicity of the drug. This reaction, based on the Benameur's method, yielded 71% of pure methylprednisolonepalmitate (MPLP) as a new drug. To analyze the properties of this drug such as the stability or the availability of the drug both in liposome's membrane and in several organs in vivo, several studies have already been done in this study using sophisticated equipment.

The incorporation of the new drug , MPLP, into liposome's membrane of a conventional liposome of Egg-yolk Phosphatidylcholine (EPC) was 70 %_ The incorporation was increased to approximately 95 % in liposome's membrane of EPC and tetra ether lipids (TEL) from Sulfolobus acidocaldarius as a stabilizer of the liposomal membrane The newest drug that is proposed in evaluating the stability of the drug in vitro and the distribution of the drug on several organs in mice is liposomal- methylprednisolone-palmitate (L-MPLP).

The stability of L-MPLP in vitro was evaluated on their particle size. They were more stable at 20° C for 9 days of incubation than at room temperature. In vivo study of L-MPLP were shown as a distribution of the metabolite of MPL or MPLP on several organs on TLC where the distribution in the liver has more higher than in the spleen, kidney, thymus, and bone-marrow, in sequence. The distribution of the metabolite of L-MPLP in the liver has also shown higher than the metabolite of the control group of liposome, MPL, or MPLP as a free drug.

Because of these successful results, this experiment will have to be continued to improve the stability of this drug and to analyze the other effects on immunosuppressive properties, toxicity, pharmacokinetics and pharmacodynamics of the drug.