Preparation of Liposomes Encapsulated Lysosomal Enzymes and Evaluation of Antimicrobial Activity

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As a tool for the stable usage of heterogeneous enzymes, the preparation of fused materials using liposomes has been examined for several decades. We investigated to encapsulate lysosomal enzymes extracted from Saccharomyces cerevisiae in liposomes, which ere made with L-α-phosphoatidylcholine from egg yolk. To encapsulate lysosomal enzymes in liposomes, the lipid was added in chloroform with a ratio of 1:10 and then the mixture was evaporated for 10 min at 4 C. The residue after evaporation was mixed using lysosomal enzymes with same ratio. Multilamellar particles were sonicated to generate uniformed formation for 0, 10, 60 and 300 sec. Lastly, the liposomes encapsulated lysosomal enzymes were confirmed as cell counts against Escherichia coli to evaluate antimicrobial activity of lysosomal enzymes. The uniformed liposomes were generated when sonicated below 10 second. We found that the antimicrobial activity was not shown at 0 day after preparing liposomes encapsulated lysosomal enzymes. However, after 1 day, we found that antimicrobial activity of fused particles was increased slowly because of enzymes release.