Probiotic liposomes contained heat-killed lactobacillus for anti-aging improvement

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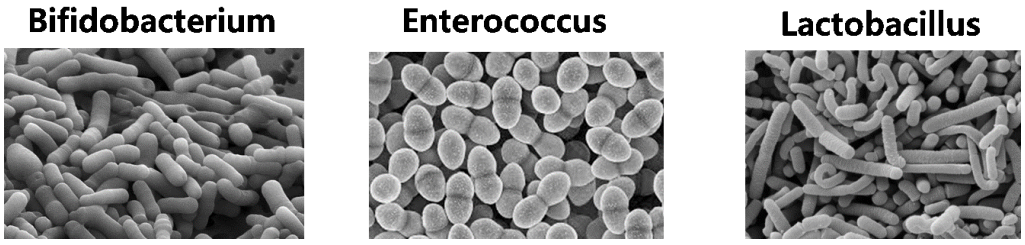
Abstract

Heat-killed lactic acid bacteria (LAB) consists of insoluble components. The liposomes using hydrogenated lecithin for stabilization of killed bacteria and transdermal delivery were prepared. Homogenizer and microfludizer were used for stabilization of heat-killed bacteria including insoluble components into liposomes. The liposomes were consisted to 1-4% hydrogenated lecithin and Physicohemical properties (particle size, zeta potential) of the liposomes were evaluated under various conditions of temperature (4, 25, 50 ℃) for 1 month, which results indicate their stability states. Homogenizer and microfludizer were used for stabilization of heat-killed bacteria including insoluble components into liposomes. The liposomes provide enhanced delivery of the components of lactobacillus into the skin.

Keywords: probiotics, liposome, skin barrier, anti-aging

Introduction.

Probiotics are living bacteria that are intended to have health benefits into the body and skin. Good living microorganisms as LAB consume the milk to offer fermented foods as yogurt for body. Lactobacillus rhamnosus as is known as beneficial bacteria to strength the skin barrier.



Materials and Methods.

The liposomes were consisted to 1-4% hydrogenated lecithin and physicohemical properties (particle size, zeta potential) of the liposomes were evaluated under various conditions of temperature (4, 25, 50 ℃) for 1 month, which results indicate their stability states. Homogenizer and microfludizer were used for stabilization of heat-killed bacteria including insoluble components into liposomes. The skin permeability of the optimized liposome formulation was investigated using Franz diffusion cells.

Results.

The liposomes provide enhanced delivery of the components of lactobacillus into the skin. The cream containing probiotic liposomes improved the wrinkles around the eyes for 2 weeks. LAB was stabilized by liposomal technique by using HOMO, MF process. the liposomes were evaluated under various conditions of temperature (4, 25, 50 ℃) for 1 month, which results indicate their stability states.

Fig 1. Images of LAB by optical microscopes

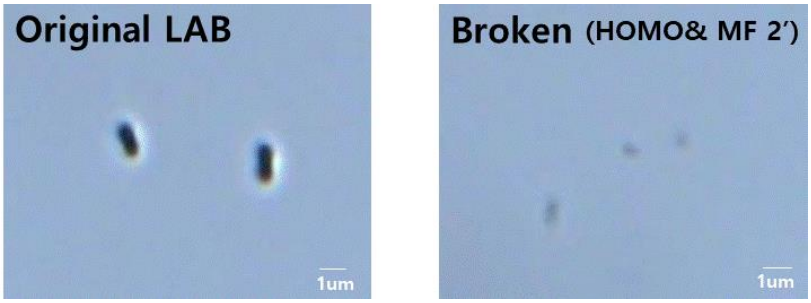
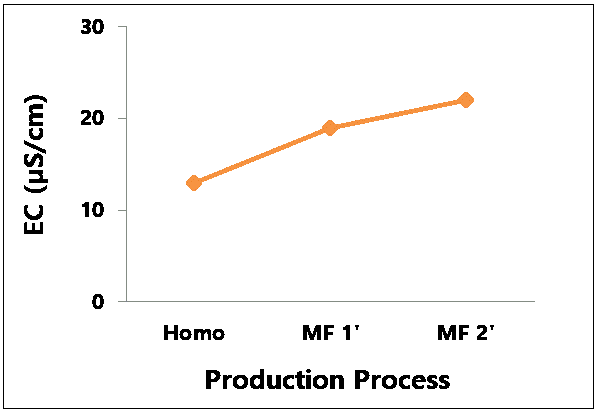


Fig. 2. Electrical conductivity (EC) of destroyed LAB.



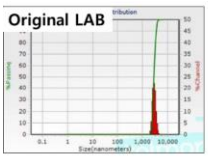


Fig. 3. Size of LAB before and after production process.
Size of LAB are reduced by homogenizer and microfluidizer process.

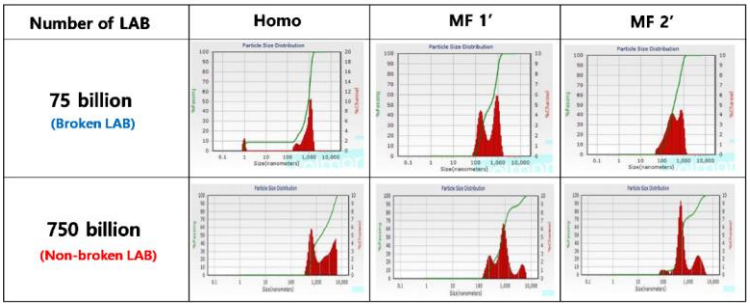


Fig. 4. Formulation Images of liposomes and liposomes containing LAB.

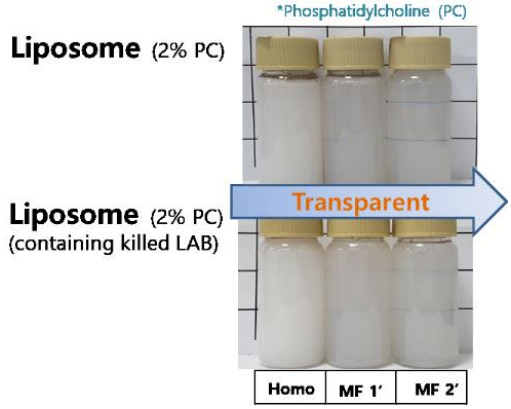
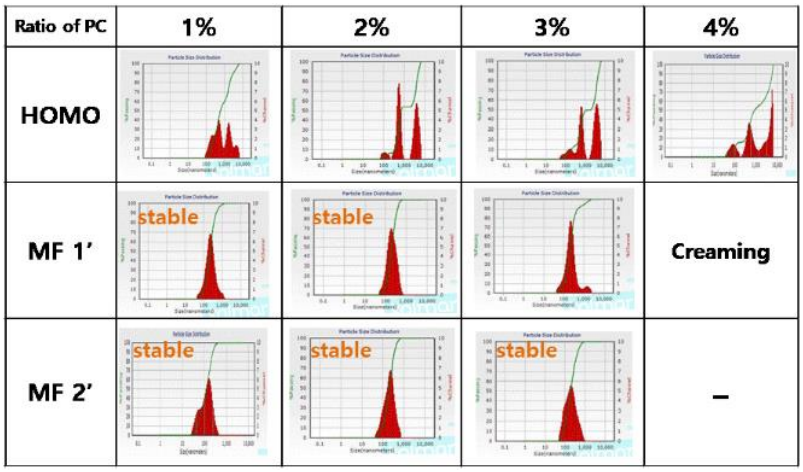


Fig. 5. Size of liposomes composed of phosphatidylcholine (PC).



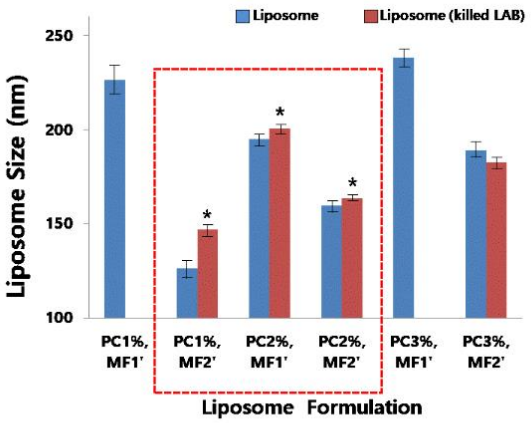


Fig. 6. Size of liposomes before and after containing LAB.

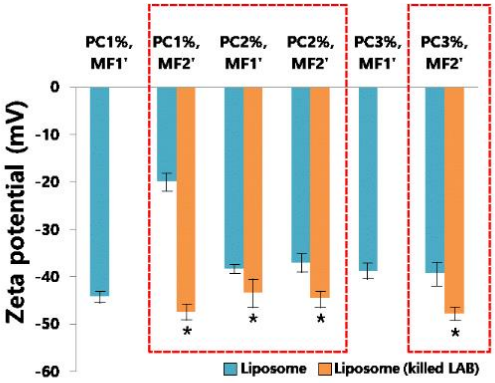


Fig. 7. Zeta potential of liposomes before and after containing LAB.

Fig. 8. Improvement effect of liposome stability by killed LAB in 50 ℃ in 50 ℃ for 12 h.

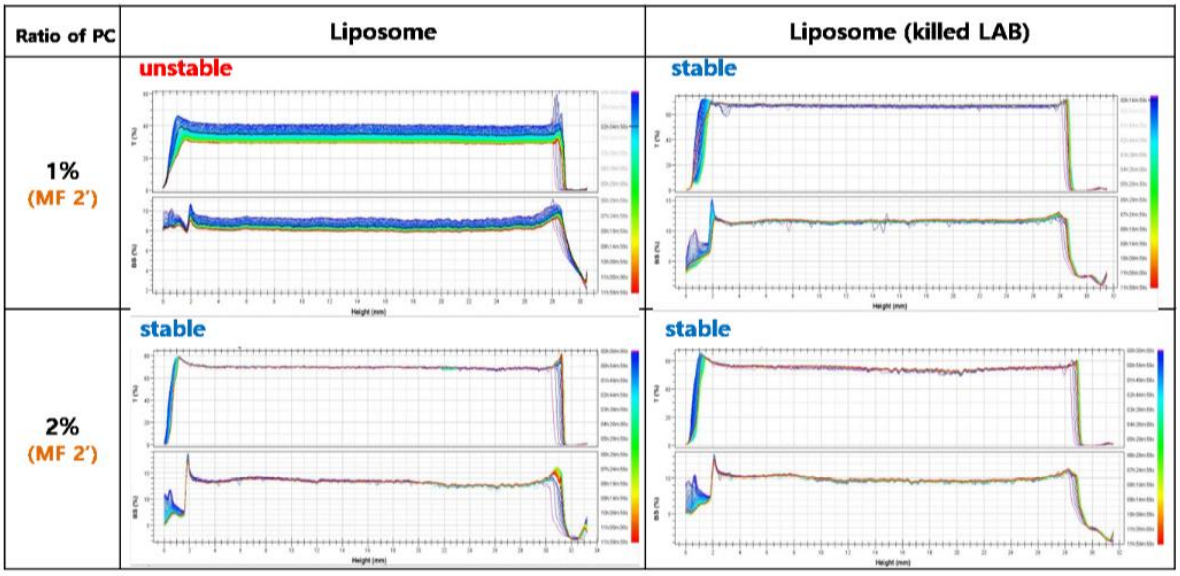
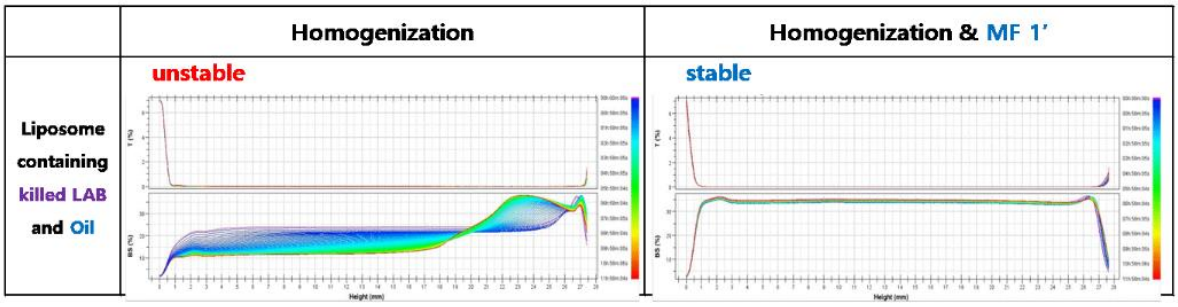


Fig. 9. Enhanced stability of liposome containing oil by microfluidizer in 50 ℃ for 12 h.



Conclusion.

These results suggest that the useful information for stabilization of insoluble heat-killed lactobacillus which strength skin barrier and anti-aging as cosmetics agents.

References.

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