

## ABSTRACT

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**Background:** Photoaging is characterized by decreasing in growth factors and will impact in structural changes of the skin. This condition makes the skin look older than it should be. Nowdays there are many ways to improve the quality of skin, one of them is using antiaging cosmetics. Amniotic membranes are currently become the potential candidates as antiaging active ingredients. In Amniotic Membran Stem Cell (AMSC)'s process culture, produce several bioactive materials in the medium culture called Amniotic Membran Stem Cell Metabolite Product (AMSC-MP). AMSC-MP has limitation in molecular weight (MW) > 20 kDa and unstable at room temperature. The macromolecule has poor penetration through the stratum corneum. To increase the penetration properties of AMSC-MP can be helped by adding Skin penetrating and cell entering (SPACE) peptide. The water component of AMSC-MP is easily overgrown with microbes can be overcome by the freeze dry method to preserve materials so extending storage life and simplifying the handling process. **Purpose:** To evaluated the impact of adding various concentration of SPACE peptide in stability and effectivity of freeze dried AMSC-MP cream as antiaging. **Methods:** The physical stability was evaluated based on pH and spredibility variation during 21 days storage. The chemical stability was determined by the concentration of TGF $\beta$  that analyzed using Enzyme-Linked Immunosorbent Assay (ELISA) during 21 days storage. Effectivity test was determined by depth of penetration after 1,3, 5 hours sample application in back mice skin using fluorescent microscopy with Rhodamine B as fluorescent label, and antiaging activity after 21 days sample application measured by scoring collagen density and number of fibroblast in histopathological preparation. The irritability test after 24 hours sample application in back mice skin measured by scoring histopathology in Hematoxylin Eosin staining and observed by light microscopy. **Result:** There is no significant different of each formulas in physical stability but gives significant different in chemical stability, formula in higher concentration of SPACE peptide show less stable but give the better effectivity. There is no significant different in irritability result.

**Keywords :** Antiaging, AMSC-MP, SPACE peptide, TGF- $\beta$ , Freeze-dry, Physical and Chemical Stability, Collagen density, Fibroblast