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## **DERIVATIZATION OF COMMERCIAL VITAMIN A TO DEVELOP THE BIO-BASED ANTI-AGING COSMETIC MATERIALS**

### **Abstract:**

A vitamin A such as retinol is a well-known source material for the anti-aging cosmetics due to its superior effects on the anti-wrinkle and anti-skin aging, and lots of cosmetic manufacturers have used it for the high-priced anti-aging products. However it mostly synthesized by the chemical process and it should be a demerit as a cosmetic material. Thus a bioprocess of the vitamin A should be developed to strengthen the competitiveness of the vitamin A based anti-aging products.

The vitamin A is also easily oxidized in the air and the oxidation causes the side effects like the skin irritation and a poor delivery of the active ingredients into the skin. The stability improvement of the bio-vitamin A must be required to minimize its side effects and enhance the absorbability and moisturizing property of the final products.

In this study, the derivatization of the retinol was performed to enhance the stability and the low-priced commercial retinol was used as a substitute material for the bio-based retinol with impurities.

A commercial Retinol 50C (BASF) was separated from the additives and others by the column chromatography for the purification and the retinol purified would be applied to the derivatization. The retinyl acetate would be synthesized through the esterification with the acetyl chloride and the derivatives were finally recovered as the crystal through the crystallizing purification. Their structural and physicochemical properties were analyzed by <sup>1</sup>H-NMR and FT-IR and it was confirmed that the purification of the low-priced retinol and the derivatization of the retinol purified were performed successfully.

### **Keywords:**

Anti-aging cosmetics, Bio-based Vitamin A, Retinol, Derivatization, Esterification, Retinyl acetate

**JEL Classification:** L65, L66