

## **A potential tocopherol acetate loaded palm oil ester-in-water nanoemulsions for nanocosmeceuticals.**

### **Abstract**

Background: Cosmeceuticals are cosmetic-pharmaceutical hybrids intended to enhance health and beauty of the skin. Nanocosmeceuticals use nano-sized system for the delivery of active ingredients to the targeted cells for better penetration. In this work, nanoemulsion from palm oil esters was developed as a delivery system to produce nanocosmeceuticals. The stability of the resulting formulation was tested using various methods. In addition, the effect of components i.e. Vitamin E and Pluronic F-68 on the formulation was also studied. Results: Both vitamin E and Pluronic F-68 were found to co-emulsify and co-stabilized the formulations. The best formulation was found to be the one having the composition of 10% Palm Oil Esters (POEs), 10% vitamin E, 24% Tween 80, 2.4% Pluronic F-68 and 53.6% deionised water. Those compositions are considered to be the best as a nanocosmeceutical product due to the small particle size (94.21 nm), low occurrence of Ostwald ripening and stable at different storing temperatures (5, 25 and 45°C) for four weeks. Conclusions: Palm oil esters-in-water nanoemulsions loaded with vitamin E was successfully formulated and has the potential for the use as nanocosmeceuticals.

**Keyword:** Nanoemulsions; Nanocosmeceuticals; Esters; Oil palm.