

Study of co-surfactant effect on Vitamin A palmitat O/W microemulsion system

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Background and Aims: The purpose of this research was to investigate co surfactant effect on the o/w microemulsion areas of pseudo-ternary phase diagrams for a model drug delivery system. Our systems consisting of sunflower oil, Tween 80 surfactant, vitamin A Palmitate], different co-surfactants and dionized water. The co-surfactants studied were anhydrous glycerol, sucrose, ethanol and 1- propanol.

Methods: A titration technique was employed for the preparation of the samples. The samples were prepared in the absence of co surfactant and presence of different co surfactants once again. The phases were identified using visual inspection and polarized microscopy. The samples of microemulsion area were separated and pseudo-ternary phase diagram were plotted for them using of Sigma plot (12) software.

Results: Results showed that with short chain alcohols, such as ethanol and 1- propanol microemulsions are very difficult to form even when surfactant is in high concentration. Systems with anhydrous glycerol and sucrose form relatively good o/w microemulsion with Tween 80, but this region for sucrose is larger than anhydrous glycerol.

Conclusions: The effects of different co-surfactants on the Vitamin A Palmitat microemulsion drug delivery system region were investigated. The co-surfactants studied were anhydrous glycerol, sucrose, ethanol and 1-propranol. In conclusion, the system: sunflower oil, Tween 80, Sucrose, water and vitamin A showed the largest microemulsion region. This system has larger solubility compared with other systems and our choice for drug formulation is increase in this system. Consequently, sucrose was selected as the best co-surfactant for this system.

Keywords: Microemulsion; Vitamin A palmitat; Pseudo-Ternary phase diagram; Co-surfactant