

STABILITY OF ENCAPSULATED TEA TREE OIL IN ACTIFILMS FOR PERSONAL CARE USES

INTRODUCTION

These little Actifilms magically disappear upon rubbing: delivered dry, they have the amazing properties to soften in the formula making them more malleable and ready to disintegrate when pressure is applied. These exclusive shapes made for the personal care industry, are stable in many types of cosmetic and personal care products.

Tea tree oil is derived from the leaves of the tea tree. It comes from the evergreen leaves of the Australian *Melaleuca alternifolia* tree. Tea tree oil can kill bacteria and fungi. Tea tree oil has been used as complementary therapy in surgery, burn care, and dental care.

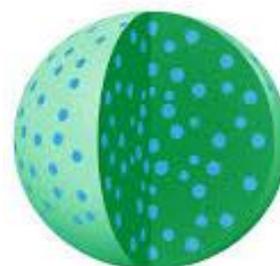
This article shows the stability of Encapsulated Tea Tree oil in Actifilms.



Key words: Encapsulated films, HPMC films, Dissolving films for Topic formulations eg: (oral care, soap, bathbombs), Decorative Water soluble Films, Natural Actifilms, Biodegradable Films.

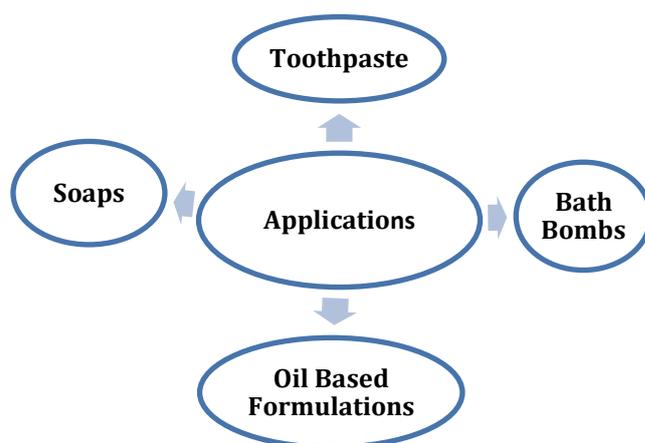
TECHNOLOGY

Umang Pharmatech has used the Pharmaceutical's popular technology i.e. **Encapsulation and Film Casting Technology** to Develop Actifilms with incorporation of desirable actives in personal care formulations to obtained better Visual impact, deliver desirable actives ingredients and provide stable Films within the formulation.



BENEFITS

- Helps in achieving the ideal end user product experience.
- Disappear on gentle rubbing without leaving any residue on teeth / oral case use upon application.
- Adds visual effects to your product to make it attract customers with four attraction senses.
- Nature friendly as soluble in water.
- Encapsulates actives.
- Various customized shapes possible.



STABILITY STUDIES:

- Due to the inert ingredients used for manufacturing, the spheres are very stable at temperatures up to 25°C.
- Encapsulated tea tree oil in Actifilms were prepared by using Umang's Film Casting technology and kept for stability studies at a temperature 25°C ± 2°C/ 60± 5 RH for 6 months and analyzed the changes occur during the testing period.

➤ Solubility Test:

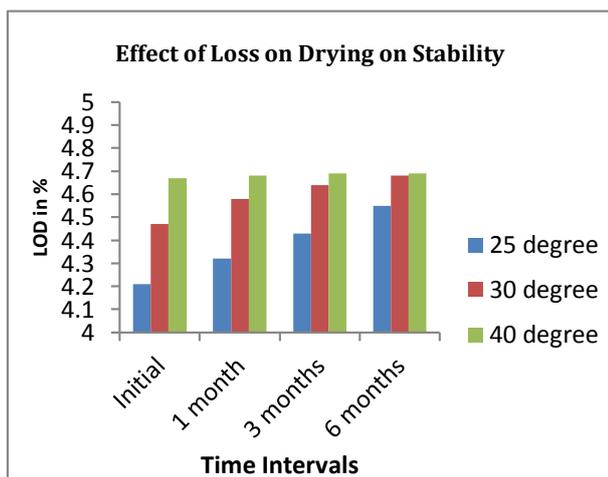
The sampling was done at fixed time intervals and analyzed in purified water and checked visually

TIME INTERVALS	VISUAL RESULTS
Initial	Soluble
After 1 month	Soluble
After 3 months	Soluble
After 6 months	Soluble

➤ Temperature Effect on LOD Stability:

The incubated Encapsulated Tea Tree Oil in Actifilms were place in an air tight glass bottles at 25°C, 30°C and 40°C ± 2°C for 3 hours.

The sampling and analysis was done at fixed time intervals for their LOD, to check the moisture loss in the samples. Results mentioned in below graph.

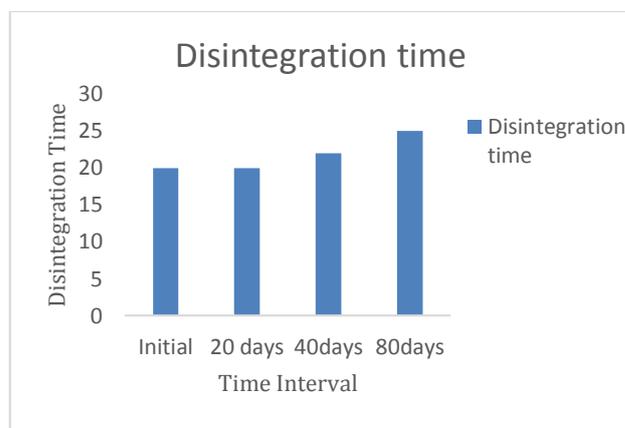


➤ Disintegration Time:

The incubated Encapsulated Tea Tree Oil in Actifilms were place in 25°C ± 2°C/ 60± 5 RH for 6 months and analyzed the changes occur during the testing period.

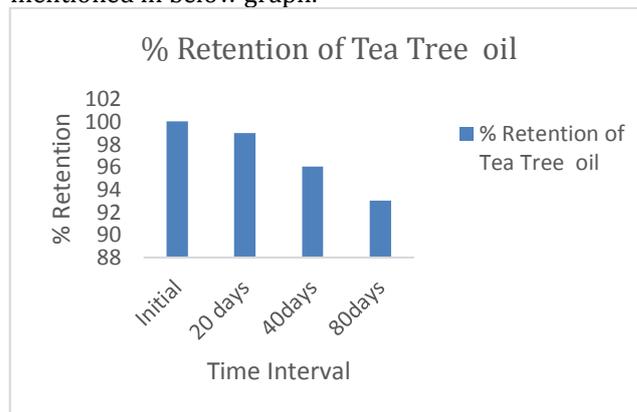
The sampling and analysis was done at fixed time intervals for their Disintegration time,

Results mentioned in below graph.



➤ % Active Content retention:

The stability of Encapsulated Tea tree oil in Actifilms was compared to that with the initial amount present in Actifilms. After 80 days at 42°C, HPLC analysis revealed that the encapsulation technology facilitated retention of 93% of the Tea tree oil of initial record. Results mentioned in below graph.



CONCLUSIONS:

The above studies show that Encapsulated Tea Tree Oil in Actifilms do not change the appearance when analyzed for Solubility, LOD and Disintegration time as testing parameters and analyzed the desirable retention throughout the stability studies. Thus, make it an ideal for use in cosmetic formulation.

REFERENCES:

- ICH Harmonised Tripartite Guideline Stability Testing of New Drug Substances and Products Q1A (R2).
- Sunita Lahkar, Malay Kumar Das, Sudarshana Bora; An Overview on Tea Tree (Melaleuca Alternifolia) Oil; International Journal of Pharmaceutical and Phytopharmacological Research (eIJPPR);2013.