

STABILITY OF ENCAPSULATED TEA TREE OIL AS COSMETIC BEADS/ SPHERES

INTRODUCTION

Encapsulated Tea Tree Oil in Spray spheres® -SC beads consist of the ingredients like Lactose, Microcrystalline cellulose, Hydroxy methyl cellulose(HPMC), and tea tree oil. It acts as a neutral carrier as it does not interfere with the active constituent's effect on skin/hair.

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

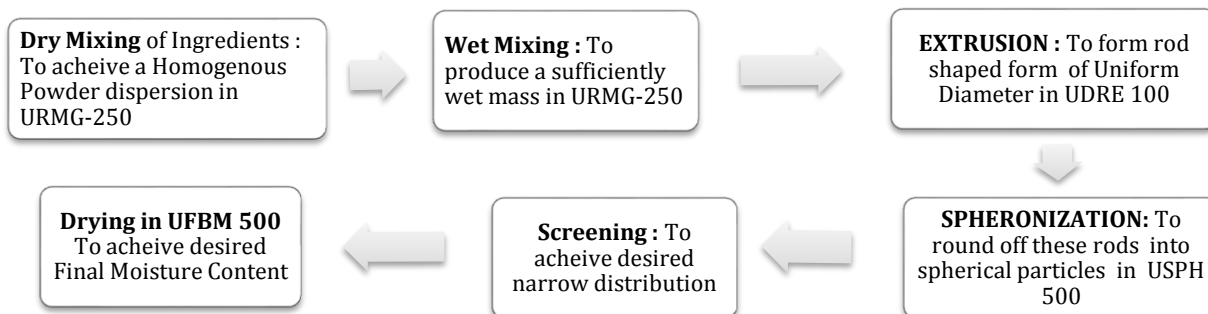
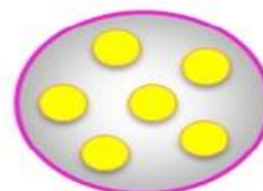


This article shows the stability of Encapsulated Tea Tree Oil in Spray spheres® -SC beads.

Key Words: Encapsulated Beads, Spheres, Cosmetic beads, Beads for special effects, Cosmetic beads for aesthetic effect

TECHNOLOGY

Umang Pharmatech has used the Pharmaceutical's popular technology i.e. **Encapsulation Technology** to develop Sprayspheres with incorporation of desirable actives in cosmetic formulations to obtained better visual impact, deliver desirable actives ingredients and provide stable beads within the formulation.



BENEFITS

- It is suitable for incorporation of both hydrophobic and hydrophilic cosmetic actives.
- It is biodegradable and nourishes skin & hair.
- It can be used in water-based personal care formulation to provide visual effects and delivery cosmetic actives.
- It disappears on gentle rubbing without leaving any residue on teeth, skin & hair upon application.
- It can be customized in customer's desirable color and active ingredients.



APPLICATIONS:

- Body /Face Creams
- Body /Face Lotions
- Body /Face Gels
- Hair shampoo
- Hair conditioner
- Oral Care

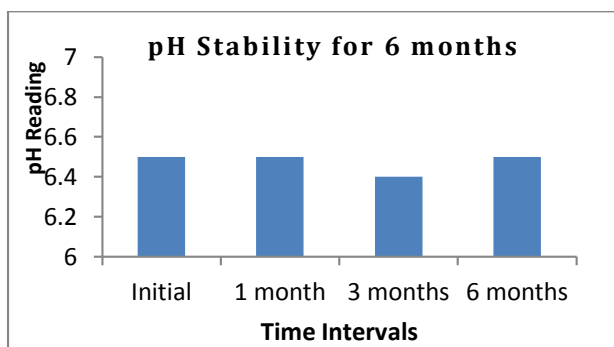


STABILITY STUDIES:

- Due to the inert ingredients used for manufacturing, the spheres are very stable at temperatures up to 25°C.
- It can withstand the pH range of 5 to 8 except blue color.
- Encapsulated Tea Tree Oil in Spray spheres® -SC beads were prepared by using Umang's Extrusion-Spheronization 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.

➤ pH Stability:

The sampling was done at fixed time intervals and analyzed in different pH solutions ranging from pH 6 to 8 and checked on pH meter for their pH. Results mentioned in below graph.



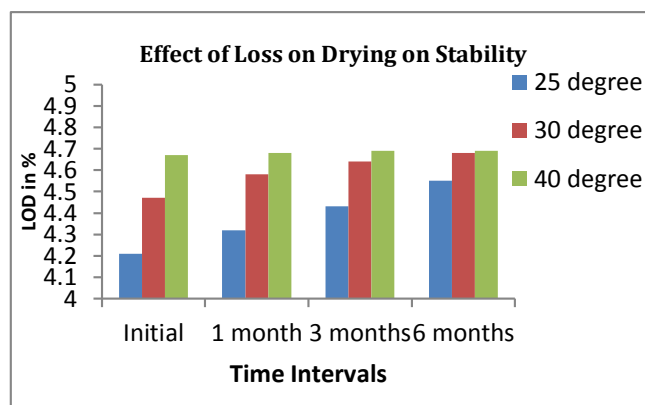
➤ Leach Test -

The sampling was done at fixed time intervals and then placed in three different pH solutions and checked visually for any color leaching. Results mentioned in below table.

TIME INTERVALS	VISUAL RESULTS
Initial	No change in color
After 1 month	No change in color
After 3 months	No change in color
After 6 months	No change in color

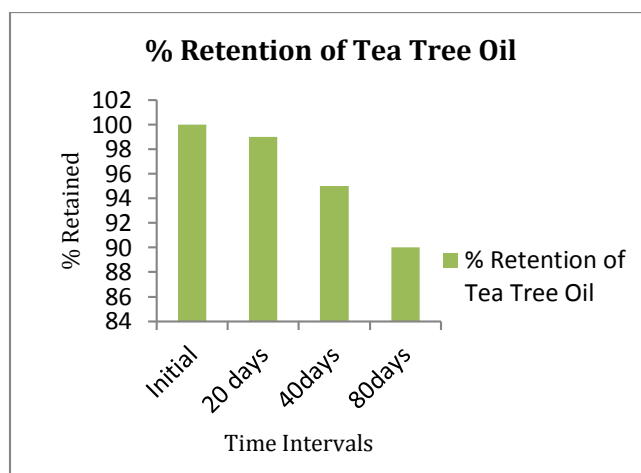
➤ Temperature Effect on LOD Stability:

The incubated Encapsulated Tea Tree Oil in Spray spheres® -SC beads were placed 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.



➤ % Active Content retention:

The stability of Encapsulated Tea Tree Oil in Spray spheres® -SC beads was compared to that with the initial amount present in Spray spheres® -SC beads. After 80 days at 42°C, HPLC analysis revealed that the encapsulation technology facilitated retention of 90% of the Tea Tree Oil of initial record. Results mentioned in below graph.



CONCLUSIONS:

The above studies show that Encapsulated Tea Tree Oil in Spray spheres®-SC beads do not change the appearance when analyzed for different pH, Leach test and Temperature as testing parameters and demonstrated 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.