

## **DIRECT INCORPORATE OF PEPPERMINT OIL VS ENCAPSULATED PEPPERMINT OIL FILMS FOR ORAL CARE FORMULATION**

Actifilms™ AF is made up of Hydroxypropyl Methyl Cellulose which is a chemically modified cellulose polymer. HPMC is a water soluble synthetic polymer which was used as film former. It is a thin, flexible sheet of polymer in which an active ingredient has been incorporated. Films are rapidly disintegrate and also have greater stability and shelf life.

### **BENEFITS OF PEPPERMINT OIL:**

- Peppermint Oil may help to reduce plaque and clean the teeth
- Peppermint oil has antibacterial properties to fight the bad bacteria and cleanse the mouth and help freshen breath.
- Peppermint oil can help to reduce the oral cavity and gum diseases
- Peppermint Oil can help to kill germs that cause pain, disease, and decay due to its antimicrobial property.

### **WHY ENCAPSULATED PEPPERMINT OIL ?**

Encapsulation Technology used in the development of formulations that more stable, more effective and with improved sensory properties. Peppermint oil is a volatile compound and its sensory properties can be change due to volatilization, heating or chemical interaction, which will alter the quality of the product. Peppermint oil is essential oil which can be degrading during processing, storage and transformation. These all problems can minimize by the encapsulation of peppermint oil.

### **UNIQUE FUNCTIONS:**

- Easy to handle at the industrial scale.
- Disappear on gentle rubbing without leaving any residue on teeth / oral case use upon application.
- Non toxic and Non irritant ,soluble in water. Available in natural flavors.
- Available in different shapes & color
- Film have more flexibility and better physical properties

### **MANUFACTURING PROCESS OF ACTIFILMS™ CONTAINING PEPPERMINT OIL:**

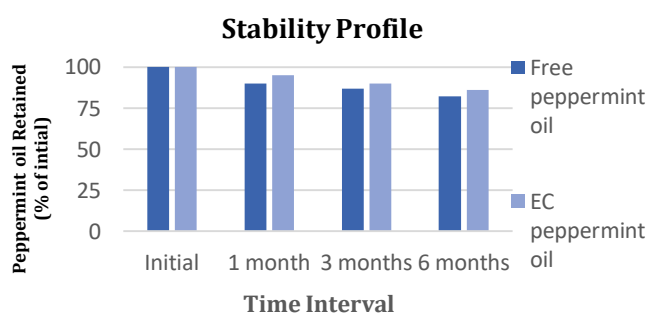
The Solution Casting method: It is ideally suited for a water-soluble polymer, "Water soluble" refers to a film which, when exposed to water, begins to dissolve or disintegrate to its smallest components. Film coating is the process whereby active material is surrounded by a thin layer of polymeric material. Film coating method generally involves the steps of



continuously pumping a feed of polymer solution with primary component i.e. HPMC. Both HPMC and colour weighed accurately and mixing of all ingredients to achieve homogeneous primary solution and further combining with secondary component to polymer solution. Secondary components such as active functional or decorative ingredients are finally deposited into the primary solution onto the casting surface for film formation using Umang Pharmatech's UCFC-600 (Solution tank, Film Casting). The resulting solution is cast as a film and allowed to dry, which are then cut into pieces of the desired size and shape.

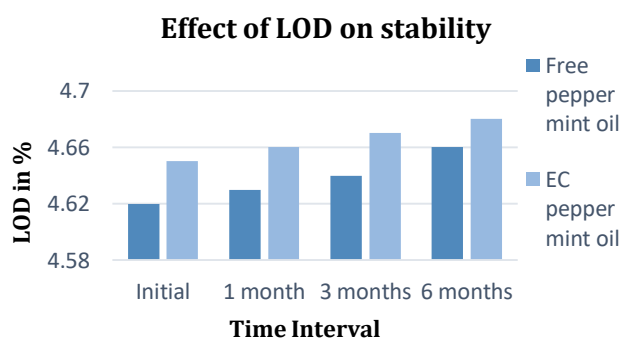
### IMPROVED SHELF LIFE STUDY:

The Free Peppermint oil and Actifilms™ containing Peppermint Oil were kept in an air tight glass bottle and place in Stability Chambers at temperatures of 30°C ± 2°C for 180 days, HPLC analysis show that the Actifilms™ containing Peppermint Oil retain 86% of the peppermint oil while the free peppermint oil only retained 82 %.



### TEMPERATURE EFFECT ON LOD STABILITY:

The Free peppermint oil and Actifilms™ containing peppermint oil were place in an air tight glass bottles at 30°C ± 2°C for 180 days in a stability chamber. 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.



### CONCLUSION:

The results obtained from this study show that using encapsulated peppermint oil are more stable and deliver desire amount of dose of Peppermint oil and make it an ideal for use in oral care formulation.

### REFERENCES:

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### KEY WORDS:

Encapsulated films, Films for special effects ,HPMC films, dissolving Films.