

DIRECT INCORPORATE OF NEEM OIL VS ENCAPSULATED NEEM 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 NEEM OIL:

- Neem Oil help to reduce the oral infection. It is used for the cleans and whitens the teeth
- Neem Oil may help to reduce the gum disease like inflammation or irritation and enhancing the gum tissue health.
- Neem Oil have antibacterial activity so it can prevent the teeth from bacteria, cleanse the mouth and help freshen breath.
- Neem Oil use for the tooth decay and mouth ulcer.

WHY ENCAPSULATED NEEM OIL ?

Encapsulation Technology used in the development of formulations that more stable, more effective and with improved sensory properties. Neem Oil is typically light and temperature sensitive. It degrades rapidly and photosensitive. Neem Oil has an anti-fungal and antibacterial activity which can be changes if oils gets oxidized and become rancid. These all problems can minimize by the encapsulation of Neem 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 NEEM OIL :

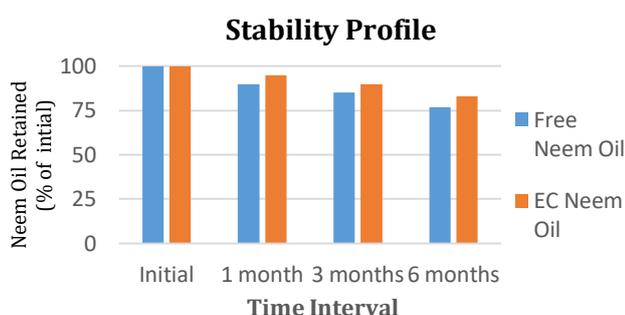
The Solution Casting method : It is ideally suited for a water-soluble polymer, "Water soluble" refers to a film which, when exposed to water, begins to dissolve or disintegrate to its smallest components. Film coating is the process whereby active material is surrounded by a thin layer of polymeric 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 Neem oil and Actifilms™ containing Neem 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 Neem oil retain 80% of the Neem oil while the free Neem Oil only retained 75 % .



TEMPERATURE EFFECT ON LOD STABILITY:

The Free Neem Oil and Actifilms™ containing Neem 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 Neem Oil are more stable and deliver desire amount of dose of Neem Oil and make it an ideal for use in oral care formulation.

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KEY WORDS:

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