

## DIRECT INCORPORATE OF KOJIC ACID VS ENCAPSULATED KOJIC ACID FOR PERSONAL CARE FORMULATION



**INTRODUCTION:** Kojic acid is produced by several species of fungi, especially *Aspergillus oryzae* grown on steamed rice. Kojic acid is an antioxidant and heterocyclic compound for skin lightening used for the skin lightening by the cosmetics industry. Kojic Acid is a chelation agent and tyrosinase inhibitor. It also has anti-fungal and antibacterial activity.

### BENEFITS OF KOJIC ACID:

- Kojic Acid is used to lighten the skin. Treat skin conditions like sun damage, scars, and age spots. It gives an anti-aging effect.
- Kojic acid may be helpful in preventing and treating fungal infections, due to its anti-fungal activity.
- Kojic acid has some antibacterial benefits; it may be helpful in decreasing skin infection.
- Kojic acid reduces hyper-pigmentation, inhibiting melanin formation and giving clear skin.

### WHY ENCAPSULATED KOJIC ACID ?



Encapsulation Technology used in the development of cosmetic formulations that are more stable, more effective and with improved sensory properties. Encapsulation protects the active ingredient from unwanted reactions. Kojic Acid has low photostability. It rapidly degrades by light and heat, which results in decreased stability, storage conditions, and desired release. Therefore, to overcome all these problems, the encapsulation method is used to enhance storage and stability of Kojic Acid.

### UNIQUE FUNCTIONS:

- Sprayspheres®- SC beads containing Kojic Acid are stable so they are easily applied into formulations.
- Sprayspheres®- SC beads containing Kojic Acid. When rubbed onto the skin, they break easily and release the active contents.
- Sprayspheres®- SC beads containing Kojic Acid are hard and solid in bulk (easy to process and deliver).
- Sprayspheres®- SC beads containing Kojic Acid are hard and dry but soften in contact with at least 20% of water.

### MANUFACTURING PROCESS OF SPRAYSPHERES® - SC BEADS CONTAINING KOJIC ACID:

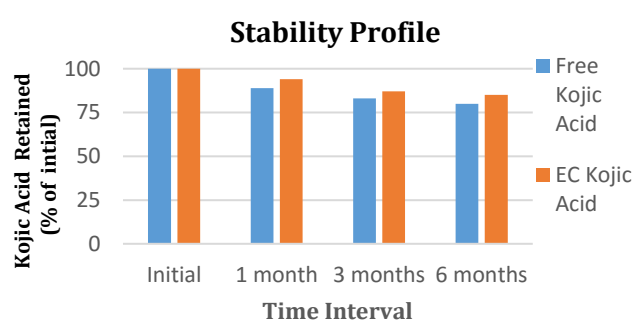
Kojic Acid, lactose, Micro-crystalline cellulose, HPMC, and color were weighed accurately and dry mixing of all ingredients is done to achieve a homogeneous powder dispersion. The obtained blend was granulated using purified water to form a wet mass. Dry mixing and wet granulation are carried out using Umang Rapid Mixer Granulator (URMG-10). This wet mass was then extruded through Umang Single screw Extruder (USSE- 60) which produces rod-shaped particles of uniform diameter from the wet mass.



Extrudes were then spheronized using Umang Spheronizer (USPH-150). After spheronization process, the obtained beads were kept for drying.

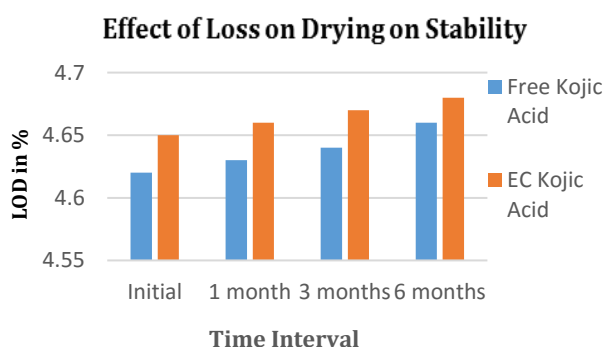
### IMPROVED SHELF LIFE STUDY:

The Free Kojic Acid and Sprayspheres®-SC beads containing Kojic Acid 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 Sprayspheres®-SC beads containing Kojic Acid retain 85 % of the Kojic Acid while the free Kojic Acid only retained 80 % .



### TEMPERATURE EFFECT ON LOD STABILITY:

The Free Kojic Acid and Sprayspheres®-SC beads containing Kojic Acid 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.



### APPLICATIONS:

- Body /Face Creams
- Body /Face Lotions
- Body /Face Gels
- Body emulsions

### CONCLUSION:

The results obtained from this study show that using encapsulated Kojic Acid i.e Sprayspheres®-SC beads containing Kojic Acid are more stable and deliver desire amount of dose of Kojic Acid for skin nourishment

### REFERENCES:

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### KEY WORDS:

Encapsulated Beads, Spheres, Cosmetic beads, Beads for special effects, Cosmetic beads for aesthetic effect.