

## 37. Title: Natural antimicrobials for food preservation

**Inventor:** Prof. Sampa Saha, Department of Material Science and Engineering

**Keywords:** Natural Antimicrobials, Biodegradable polymer, Double emulsion, Food preservation

**Domain:** Life Sciences (Agriculture)

**Summary:** The demand for fresh-like, sustainable, minimally processed, and clean label food products have been increasing significantly. Therefore, a new method is developed to prepare controlled release formulation and active delivery system which shows complete growth inhibition of bacteria at ambient conditions over a long period of time so that food preservation at room temperature becomes possible without compromising human health. The developed technique involves a natural organic acid and an essential oil encapsulated in a poly lactide-co-glycolide (PLGA) based porous micro particles which will act as active delivery vehicles with prolonged biocidal activity. The method involves a combination of two natural antibacterial (benzoic acid and mustard oil) capable of complete inhibition of bacterial growth over 60 days at ambient conditions.

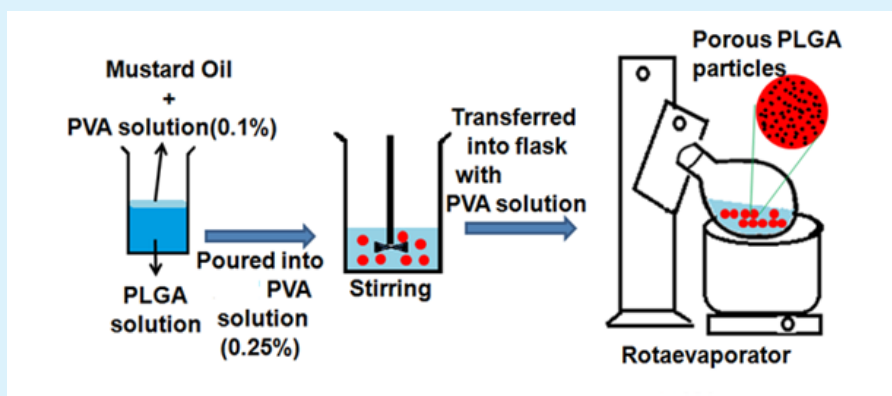


Figure: Fabrication of porous PLGA micro particles using double emulsion technique

### Advantages:

- » This is bio-based/natural materials-based formulation hence there is no need to add excess preservatives.
- » Prolonged food shelf life
- » No requirement of storing food at refrigeration temperature

**Applications:** Food preservation industries and Drug delivery systems

**Scale of Development:** An antimicrobial formulation is developed and demonstrated in Laboratory environment.

**Technology Readiness Level:** 5

**IP Status:** Granted Indian Patent 380583