

Sorption and Desorption of cesin oil methyleugenol and optimized encapsulation with polycaprolactone using particle from gas saturated solutions (PGSS)

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The encapsulation and release of active compounds in the host mesoporous polymers is necessary for the controlled delivery of active compounds in drugs, food and cosmetics. In this study the essential oil containing methyleugenol (ME) was extracted from wild sesin using supercritical carbon dioxide with ethanol. The characterization of ME content from encapsulated oil using particle from gas saturated solution with polycaprolactone as a polymer (PGSS-PCL) was achieved using HPLC. Both sesin oil (SO) and standard ME were entrapped in different mesoporous nanocomposite polymers; polymethylmethacrylate (PMMA), Mesoporous silica (SBA-15) and MCM-41 via vapor adsorption of ME and SO. The entrapped ME from both the standard ME and extracted SO was desorbed by oven temperature adjustment and recording differential weight every 12 hours for 4 days. The optimization conditions for the encapsulation of SO using PGSS with different variables (Temperature, pressure and oil to polymer ratio) using Response surface Methodology, the best conditions were applied to different polymers and used for antimicrobial activity.