

## Effect of the degree of polymerization of inulin-type fructans on the kinetic stability of emulsions containing chamomile extract

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### Abstract

The goal of this work was to use different coating materials to produce emulsions containing supercritical chamomile extract by ultrasound technology. The main purpose was to select the best coating material to produce stable emulsions for further application in gelled products for topic use.

### Key words:

supercritical extraction, ultrasound, prebiotics

### Introduction

In the recent years, the industry has been pressed to develop healthier products to attend the consumers' demand that are not only interest in high quality products but also prefer to consume products obtained by greener processes. The supercritical fluid extraction has been raised as a good choice for obtaining natural extracts with high quality in an environmentally friendly way, since besides to obtaining extracts free of organic solvents it is a clean technology that presents little or no aggression to the environment. In the process of supercritical fluid extraction from solid matrices, the supercritical fluid continuously passes through the bed of particles and dissolves the solute. The solutes are dissolved by the solvent and transferred by diffusion to the external surface, then the solute / solvent mixture leaves the extractor and passes through the precipitator, where they are finally separated<sup>1</sup>. Chamomile (*Matricaria recutita* L) is a medicinal plant that grows spontaneously in Europe and some Asiatic countries and is largely spread around the world<sup>2</sup>. It has been used in the folk medicine since the ancient times to treat several diseases. Chamomile extracts present a rich composition containing several bioactive compounds including chamazulene, alfa-bisabolol, cumarines, organic acids, flavonoids, etc<sup>3</sup>. Among these, the chamazulene and alfa-bisabolol has great importance for the pharmaceutical industry due its anti-inflammatory and antibacterial properties, respectively<sup>2</sup>. Thus, the delivery of chamomile functional compounds in encapsulated systems that promote the protection and controlled delivery of them is a promising alternative for developing of new phytotherapeutic products. In this sense, the objective of this study was to evaluate the effect of different coating materials to obtain emulsions containing chamomile extracts obtained by supercritical fluid extraction and using saponin as emulsifier. The coating materials evaluated were fructooligosaccharide (P95) and chicory inulin Orafti® GR (DP ≥ 10) and Orafti® HP (DP ≥ 23) (BENEO-Orafti, São Paulo, Brazil).

### Results and Discussion

According to the backscattering (BS) profile recorded after 7 days it is possible to observe that the addition of HP as coating material resulted a destabilization phenomenon of the emulsion. The emulsions obtained without the addition of coating material (control) and with

the addition of P95 and GR were stable after the storage period (Figure 1).

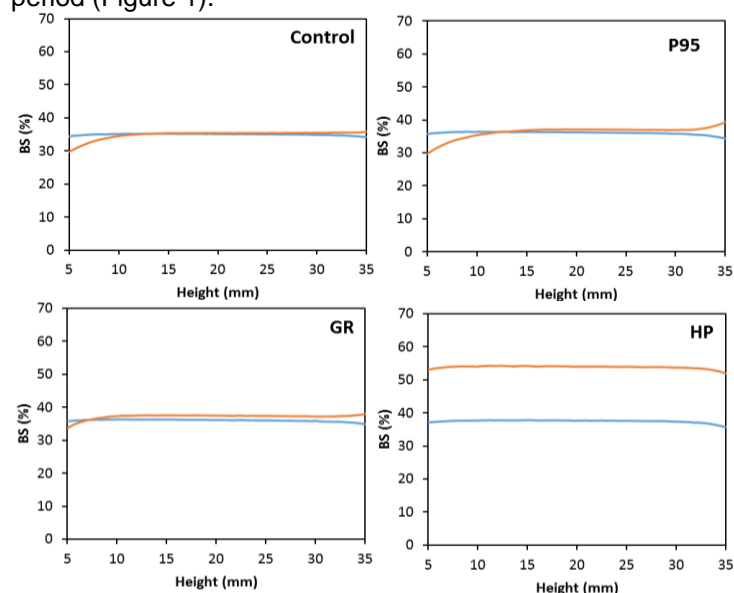


Figure 1: Backscattering profile of emulsions. Blue line: fresh emulsions and orange line: after 7 days of storage.

### Conclusions

Emulsions containing chamomile extract were successfully obtained using fructooligosaccharides (P95) and inulin with lower degree of polymerization (GR), which enable to use these encapsulated systems for further developments of phytotherapeutic products. More details will be provided in the poster presentation.

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