Effect of solids content and oil load on the microencapsulation process of rosemary essential oil

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Highlights

- Rosemary essential oil was encapsulated through spray drying process.
- Maltodextrin and modified starch (1:1) were suitable as wall materials.
- Optimal wall concentration and oil load were 20.9% and 29.4%, respectively.
- Particles revealed surfaces with depressions and without fissures.
- The rosemary oil maintained all of its main constituents after the spray drying.

Abstract

Microencapsulation by spray-drying is widely used in the preparation of flavors in the food industry. This study sought to evaluate the influence of oil load and wall material ratios on the properties of rosemary essential oil microencapsulated by spray-drying, using maltodextrin and modified starch as carriers. Increasing the oil load of the emulsion, the obtained particles presented higher moisture content, lower hygroscopicity and higher total oil content. The increased wall material content lengthened the wettability time. This research further suggested that the optimal wall concentration and oil load conditions are 20.9% and 29.4%,
respectively. The encapsulated oil composition proved to be quite similar to pure oil. The mean particle size was 12.2 μm and the analysis of the particles revealed surfaces with some depressions, however without fissures.

Keywords
Starch, Maltodextrin, Spray drying, Surface response methodology