**Encapsulated brazilian red propolis extract: particles caracterization and stability of bioactive compounds**

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RESUMEN

Red propolis, originary from Northeast Brazil, has a unique composition and a great commercial interest. However, due to the presence of ethanol and its remarkable sensory characteristic, its application in food, cosmetics and herbal medicines can be challenging. Through microencapsulation is possible to overcome these challenges and to produce propolis in powder form. Thus, the aim of this work was to microencapsulate red propolis extract by spray-drying, spray-chilling, and combining both techniques (for production of coated particles), to characterize the particles, and to evaluate the stability of bioactive compounds during storage of the particles. The propolis extract was produced using ethanol (80% v/v). The particles produced were evaluated for size and distribution, scanning electron microscopy, instrumental color, and according to the stability of phenolic compounds, flavonoids and the isoflavonoid formononetin, a chemical marker of the red propolis, during 60 days of storage. The results obtained for size distribution showed spray dried, chilled and coated particles with diameters of volume ranging from 21.88 to 66.03 µm, from 222.53 to 286.74 µm, and from 146.56 to 215.15 µm, respectively, depending on the proportion of the carrier used. Scanning electron microscopy showed that all particles presented a matrix type characteristic, with different formats between treatments and that fractions of particles obtained by spray drying are not properly covered by the combination of techniques. The color evaluation showed that the color difference over the period studied was smaller in the coated particles and greater in the particles obtained by spray chilling. The techniques used to produce the particles efficiently obtained powdered propolis extract and protected the bioactive compounds during powders storage. In conclusion, the use of microencapsulation techniques by spray-drying, spray-chilling, and their combination developed particles with different characteristics and levels of bioactive compounds protection during storage, which resulted in a range of possible applications of them in the food and pharmaceutical industry.

Palabras Clave: flavonoids; formononetin; microencapsulation;