Abstract

The Malay apple is a fruit tree found in northeastern Brazil; little is known about the composition and properties of its fruit, which motivated the present study. Among natural antioxidants, anthocyanins are pigments responsible for the red and blue coloring of a wide range of food plants. There is a growing interest in their use by the pharmaceutical industry; however, their sensitivity to environmental factors means processing is required to ensure their stability. Spray-drying has proved to be effective in this regard. The aim of this study was to dry Malay apple skin extract by two different methods (spray- and freeze-drying) and analyze the physical and chemical properties, morphology, and bioactive compounds of the products obtained, in order to assess the preservation of the antioxidants and conduct a preliminary study on their possible encapsulation. The results indicated that it is possible to obtain a powder with low humidity and preserved biocharacteristics using freeze- and spray-drying, with high yield. When compared to the freeze-dried product, the spray-drying conserved the bioactive compounds and provided smaller size distribution than that obtained by freeze-drying. The results obtained by spray-drying showed favorable for use in controlled release systems.

Practical applications

This work had as practical applications the use of a local and almost industrially unexplored fruit, the Malay apple, as a product rich in anthocyanins and other bioactive compounds for use as food additive and with potential use in cosmetics, since the compounds obtained, anthocyanins, have proven antioxidant capacity. Bioactive compounds from the peel of the Malay apple were determined for the first time. The spray-drying process maintains much of the bioactive characteristics of the Malay apple skin. The freeze-drying process is more effective in preserving the properties of the skin.
of the Malay apple. The zeta potential of the Malay apple was determined for the first time.