

Influence of Encapsulating Agents in Anthocyanin Content of Pomegranate Juice Dehydrated by Spray Drying

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Abstract

Pomegranate (*Punica granatum* L.) is a fruit rich in phenolic compounds, such as anthocyanins, which are natural important antioxidants responsible for the intense red color of its juice. Spray drying is a widely used technology of dehydration that produces good quality particles. The use of encapsulating agents during drying process is important because besides reducing problems related to the viscosity of fruit juices, they can also help in the preservation of some bioactive compounds due to their coating action. The objective of this study was to evaluate the influence of different combinations of drying agents in the anthocyanin content of pomegranate juice subjected to atomization. For the drying process on laboratory scale was used the equipment from Büchii brand, model B190. The temperatures of the drying air varied from 162°C / 170°C (inlet) and from 89°C to 93°C (outlet). Three different agents were used following a triangular planning: acacia gum, modified starch (Capsul[®]) and maltodextrin. The collected powder was stored in vacuum sealed packages, which remained at 25°C until anthocyanin analysis. Chromatography was performed on a Waters[®] Alliance 2695 system, with a Waters[®] 2996 photodiode array detector, with a Thermo[®] Scientific C18 BDS (100mm x 4.6mm; 2.4µm) column and gradient elution method with acetonitrile and formic acid. The wall material formulation that promoted the higher anthocyanin retention was the combination of gum and Capsul[®] (1:1). This formulation promoted for the anthocyanins delphinidin-3,5-diglucoside, cyanidin-3,5-diglucoside, delphinidin-3-glucoside, pelargonidin-3,5-diglucoside, cyanidin-3-glucoside and pelargonidin-3-glucoside, retentions of 53%, 87%, 99%, 65%, 61% and 53%, respectively. With the results obtained, it was possible to conclude that gum and Capsul[®] formulation provided better protection to the anthocyanins, being that an important information for food industries, which are aiming for natural food ingredients with elevated antioxidant properties.

Keywords: bioactive compounds, powder, preservation