



Contents lists available at ScienceDirect

Food and Bioproducts Processing

journal homepage: www.elsevier.com/locate/fbp

 IChemE ADVANCING CHEMICAL ENGINEERING WORLDWIDE


Effect of spray drying conditions on the physical properties of Cagaita (*Eugenia dysenterica* DC.) fruit extracts

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ARTICLE INFO

Article history:

Received 16 March 2015

Received in revised form 22 September 2015

Accepted 2 October 2015

Available online 22 October 2015

Keywords:

E. dysenterica

Powder extract

Glass transition temperature

Inlet air temperature

Carrier agents

Spray-dried

ABSTRACT

Cagaita is a Brazilian native fruit with potential health effects associated with its high content and peculiar profile of polyphenols. The aim of this work was to produce spray dried extracts from *Eugenia dysenterica* fruit comparing gum arabic (GA) and inulin as carrier agents and to evaluate the effect of different drying conditions on the physical properties of the resulting powders. The inlet air temperature (120 °C, 140 °C and 160 °C) and concentrations of carrier agents (10%, 20% and 30%) were tested. Samples were evaluated for moisture content, water activity, hygroscopicity, solubility, glass transition temperature, color and particle morphology, and results were subjected to response surface methodology. A freeze-dried sample was used for comparison. A better yield was observed when using GA as carrier agent. Regarding the moisture content and water activity of the powders, all samples showed better values than those presented by the freeze-dried sample. The spray drying process increased the solubility and reduced the hygroscopicity of the samples. The glass transition temperature was more affected by temperature in case of samples with GA; in contrast, the concentration of carrier agent was the parameter that most influenced the samples spray-dried with inulin. The morphology of the particles was affected by both the carrier concentration and temperature.

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1. Introduction

Cagaita (*Eugenia dysenterica* DC.) is an important native fruit species belonging to the Myrtaceae family and is native to

Brazilian Cerrado, occurring at higher density in areas with temperatures ranging from 21 °C to 25 °C and altitudes from 380 to 1100 m, with a fructification period between November and January (de Souza et al., 2007). *E. dysenterica* is used in

Abbreviations: GA, gum arabic; C, concentration of carrier agents (%); T, inlet air temperature; a_w , water activity; M, moisture content; S, solubility; H, hygroscopicity; T_g , glass transition temperature; L, lightness; SEM, scanning electron microscopy; a^* , redness; b^* , greenness.

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<http://dx.doi.org/10.1016/j.fbp.2015.10.001>

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