

[PS1.95]

**Production of concentrated acerola juice and acerola powder by integration of membrane and microencapsulation technologies**

M.M. Pagani\*<sup>1</sup>, M.H.M. Rocha-Leão<sup>1</sup>, J.P. Pinto<sup>2</sup>, A.O. Ribeiro<sup>3</sup>, P.A. Costa<sup>1</sup>, L.M.C. Cabral<sup>4</sup>

<sup>1</sup>Universidade Federal do Rio de Janeiro UFRJ/Rio de Janeiro, Brazil; <sup>2</sup>Universidade Estadual do Rio de Janeiro UFRJ/Rio de Janeiro, Brazil; <sup>3</sup>Universidade Federal Rural do Rio de Janeiro UFRRJ/Rio de Janeiro, Brazil; <sup>4</sup>Embrapa Agroindústria de Alimentos/ Rio de Janeiro, Brazil

This study aimed to evaluate the integration of membrane separation processes, microfiltration (MF), reverse osmosis (RO) and osmotic evaporation (OE) with the microencapsulation technology to obtain clarified and concentrated acerola juice and microcapsules produced from the MF retentate fraction. Acerola juice was clarified by MF and then pre-concentrated by RO. The concentration by OE of the juice previously concentrated by RO was performed in a lab system with hydrophobic membranes. The TSS (°Brix) increased from 27 °Brix to 44°Brix, resulting in volumetric concentration factors (VCF) equal to 2.81, 2.67, 1.63, respectively. Regarding vitamin C and anthocyanins concentration factors were 2.43, 2.57 and 1.45 and 2.61, 1.92 and 1.14, respectively. The determination of the antioxidant activity showed no difference between the concentration factors of the three processes, 2.96, 2.43 and 1.94. It can be concluded that the acerola juice concentrated by OE retained its nutritional quality, with no significant loss of nutrients. The material retained in the MF step presents physico-chemical and nutritional properties very similar to the integral juice. So it was microencapsulated by spray drying in order to obtain a stable powder rich in vitamin C. Encapsulating agents such as maltodextrin (M) and gum arabic (GA) were mixed in different proportions. The vitamin C and anthocyanins contents and antioxidant activity were evaluated for a period of 90 days. The formulation containing the core material in the same proportion (10% GA +10% M) retained more anthocyanins (88%) while vitamin C (84%) and antioxidant activity (88%) were more retained by the formulation that composed by the two encapsulating agents, with GA present in higher content (15% GA + 5% M). However, regarding the overall behavior of the microcapsules and considering the economic costs of the encapsulation materials, it was verified that the formulation (10% GA +10% M) presented the best results.