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Influence of microfiltration process on the anthocyanin pomegranate juice content

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Pomegranate (*Punica granatum* L.) juice obtained from the fruit arils has potential health benefits due its phenolic compounds content, especially anthocyanins, which are known for their high antioxidant activity. The anthocyanins present in this juice are the 3-glucosides and 3, 5-diglucosides of delphinidin, cyanidin and pelargonidin. Membrane technology is the most employed nonthermal process in the chemical, pharmaceutical, biotechnological and food industries. Microfiltration, to obtain clarified fruit juice, has been considered a good alternative to the traditional methods, since flavors, essential nutrients, color and vitamins undergo minimal changes. In general, membrane processed products present “fresh-like” characteristics. The objective of this work was to evaluate the influence of microfiltration process on the anthocyanin content of the pomegranate juice. Before the membrane process, the juice was filtrated through mesh of 150 μ m to remove insoluble solids in suspension. The clarification was conducted in a microfiltration system with 18 polymeric flat sheet polyvinylidene fluoride membranes with pore size of 0.15 μ m, in a plate-and-frame configuration, and a filter total area of 0.324m². The applied transmembrane pressure was 2.5 bar and the temperature was maintained at 25°C \pm 2. The clarification was carried out in batch mode (recycling the retentate to the feed tank and collecting continuously the permeate stream), with a medium flux of 17.0kg/hm². Anthocyanin analysis was performed by HPLC. The total anthocyanin content of the feed, the permeate and the retentate streams were 148.60mg/100g, 110.25mg/100g and 135.34mg/100g, respectively, which means that the microfiltration process permitted the obtaining of a clarified juice with a high content of anthocyanin and consequently colored. It was verified a degradation of 14% over the total anthocyanins during the process. By these results, it was also observed that the retentate could be used to elaborate others products with considerable content of those compounds.

Keywords: clarification, phenolic compounds, *Punica granatum* L.

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