

## Freeze and freeze drying applied as preservation processes of melon peel

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There is an increasing interest in the valorization of parts of fruits that are not conventionally consumed. These parts, such as peel, may present higher concentrations of bioactive compounds than edible ones, being considered potential sources of health-promoting compounds. Convenient transformations and adequate preservation processes are important for an effective utilization of these wastes.

In this context, the objective of this work was to study the effects of freezing and freeze drying processes on total phenolics, total chlorophylls and antioxidant activity of cantaloupe melon peel during storage.

Peel of Cantaloupe melons (*Cucumis melo* L. var. *reticulatus*) was removed with a knife and cut into small pieces.

Approximately 200 g of peel were submitted to a freeze drying process (-50 °C, 20 Pa, 90h). Dried samples were packed in polyethylene flasks (100 mL) and stored in dark at room temperature. The same amount of peel was frozen in a forced air freezer at -80 °C. Frozen samples were also packed into polyethylene flasks and stored at -18 °C. The processes were performed in triplicate.

Total phenolics, chlorophylls and antioxidant activity were analyzed before and after drying processes and after 42 days of storage.

Fresh cut melon peel had  $2251.2 \pm 270.1$  µg/g (in dry basis; d.b.) of total phenolics,  $902.3 \pm 109.5$  µg/g (d.b.) of total chlorophylls and  $2103.3 \pm 325.3$  µg/g (d.b.) of antioxidant activity.

The freeze drying process did not affect significantly these compounds. Dried melon peel also retained these compounds till the end of storage, being the contents equivalent to the ones observed in fresh cut samples.

The impact of freezing was only significant in chlorophylls. After freezing, samples suffered a decay of 40% in total chlorophylls content, which was also observed at the end of frozen storage. Total phenolics and antioxidant activity were not affected by freezing and the contents of these compounds in melon peel stored at -18 °C were equivalent to the ones observed in fresh samples.

Concerning the bioactive compounds analyzed and antioxidant activity, both processes can be considered effective in melon peel preservation. They can be applied as strategies to transform waste parts of fruits for further uses in food industry.

### **Keywords**

Fruit wastes, Phenolics, Chlorophylls, Antioxidant activity

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