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#### **Title:**

**Valorisation of Cantaloupe melon peel by freeze drying process**

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**Abstract:** (Your abstract must use **Normal style** and must fit in this box. Your abstract should be no longer than 300 words. The box will 'expand' over 2 pages as you add text/diagrams into it.)

Melon is a fruit with a high amount of waste parts, particularly peel (around 25 % of total weight). Wastes are abundant sources of bioactive compounds, considered to be health beneficial. Waste parts deserve valorisation that may be attained by developing strategies to transform them into more convenient forms that can be used as food ingredients.

The objective was to transform melon peel into powder by freeze drying and assess the impact of the process on some quality characteristics (total phenolics and chlorophylls contents and antioxidant activity) and on total mesophylls and yeasts and moulds flora.

Cantaloupe melon (*Cucumis melo* L. var. *reticulatus*) peel was removed and cut into small pieces. Approximately 300 g of peel was submitted to a freeze drying process (-45 °C, 20 Pa, 96h), replicated twice. Dried samples were smashed into powder and analysed.

The characteristics above mentioned and target microorganisms were evaluated before and after the freeze drying process. Initial moisture was 9.0 (dry basis; d.b.) and the water activity of dried samples was  $0.060 \pm 0.010$ .

Total phenolics content ( $\mu\text{g}_{\text{gallic acid}}/\text{g}_{\text{sample}}$  d.b.) was significantly affected by the freeze drying process, decreasing 22% ( $2216.0 \pm 312.9$  in fresh and  $1720.7 \pm 227.4$  after drying). Total chlorophylls content ( $\mu\text{g}/\text{g}$  d.b.) suffered a significant decay of 7% ( $923.4 \pm 13.4$  in fresh and  $859.2 \pm 24.1$  in dried samples). Antioxidant activity ( $\mu\text{g}_{\text{ascorbic acid}}/\text{g}_{\text{sample}}$  d.b.) was not affected ( $2079.2 \pm 305.4$  in fresh and  $1595.6 \pm 727.4$  after drying).

Initial counts of mesophylls were  $8.0 \times 10^6$  cfu/mL, decreasing  $0.3 \pm 0.1$  log-cycles after freeze drying. Yeasts and moulds averaged  $3.7 \times 10^5$  cfu/mL in fresh peel, suffering a fall of  $1.1 \pm 0.1$  log-cycles after processing.

Freeze dried melon peel retained antioxidant activity and a considerable amount of total chlorophylls and can be used as an innovative food ingredient with bioactive compounds. Investigation on decontamination processes is still required for maximum quality retention and safety levels of the material.

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