NUTRITIONAL VALUE AND ANTIOXIDANT ACTIVITY OF BEE POLLEN SUBMITTED TO DIFFERENT PRESERVATION TECHNIQUES

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Introduction

The moisture content of bee pollen is one of the most important parameters for the preservation and quality of this product, which can vary from 18 to 25%, depending on the technique and the time of collection [1]. These humidity values can contribute to the proliferation of microbiological contamination and changes in the nutritional value of pollen, which can make its consumption and commercialization unfeasible [2 and 4]. In this study, it was intended to evaluate the impact of different preservation techniques on the nutritional value and antioxidant properties of bee pollen.

Methodology

Pollen samples were collected in Bragança (Portugal) and frozen at -20ºC. The frozen samples, which had an initial moisture content of 13.8%, were subsequently subjected to several preservation techniques: oven drying at three different temperatures (35ºC, 40ºC and 45ºC) and freeze drying. The nutritional value (moisture, ash, protein, fat and sugars), total phenolics, antioxidant properties (DPPH and reducing power) were evaluated according to the methodology described by Almeida-Muradian et al., [3] over time for a period of 9 months (1, 3, 6 and 9 months) of storage.

Results

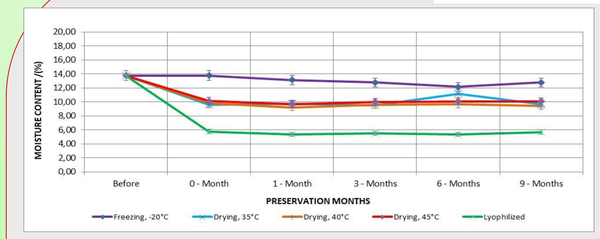

Figure 1. Nutritional value of bee pollen (moisture, ash, protein, fat and total sugars)

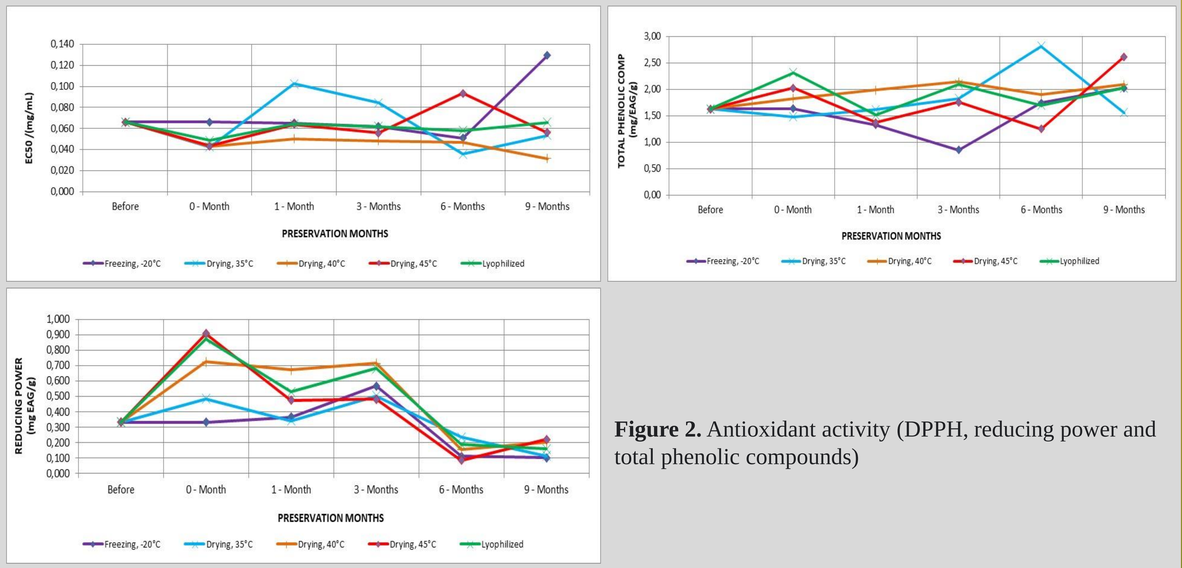

Figure 2. Antioxidant activity (DPPH, reducing power and total phenolic compounds)

Conclusions

Over the 9 month storage period, the lyophilization technique showed the best performance in terms of preserving the nutritional value of the pollen samples. On the other hand, samples preserved using the drying technique in an oven at a temperature of 45ºC showed, after 9 months of storage, a higher content of total phenolic compounds, which was reflected in a greater reducing power of these same samples. Thus, when making the decision on the preservation technique to be used, the beekeeper will have to take into account some aspects, namely: the type of product he intends to present to the consumer, as well as the cost of purchasing the equipment, since in general, the purchase of a freeze dryer will represent an increased cost compared to the purchase of a drying oven.

References

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