

Phenolic content and antioxidant activity of apples dehydrated by freeze-drying and hot air drying

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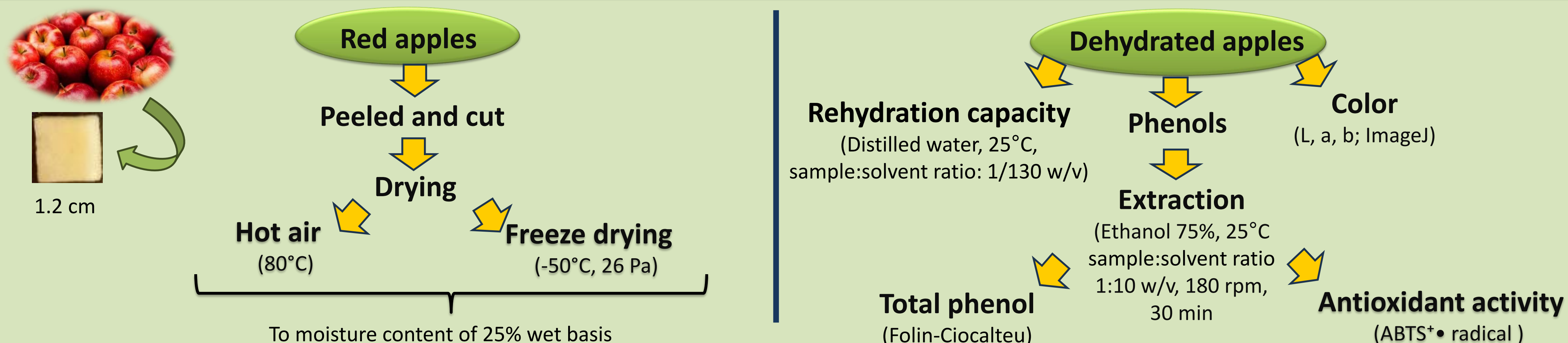
INTRODUCTION & AIM

Fruits are highly nutritious due to their antioxidant content (phenolic). However, their utilization is limited because they are highly perishable and stationary. Therefore, the search for technologies that extend shelf life while preserving the quality attributes of fresh produce is of interest.

AIM

The objective was to preserve diced apples by freeze-drying and hot-air drying, comparing the effects of these technologies on phenolics and antioxidant activity

METHOD



RESULTS & DISCUSSION

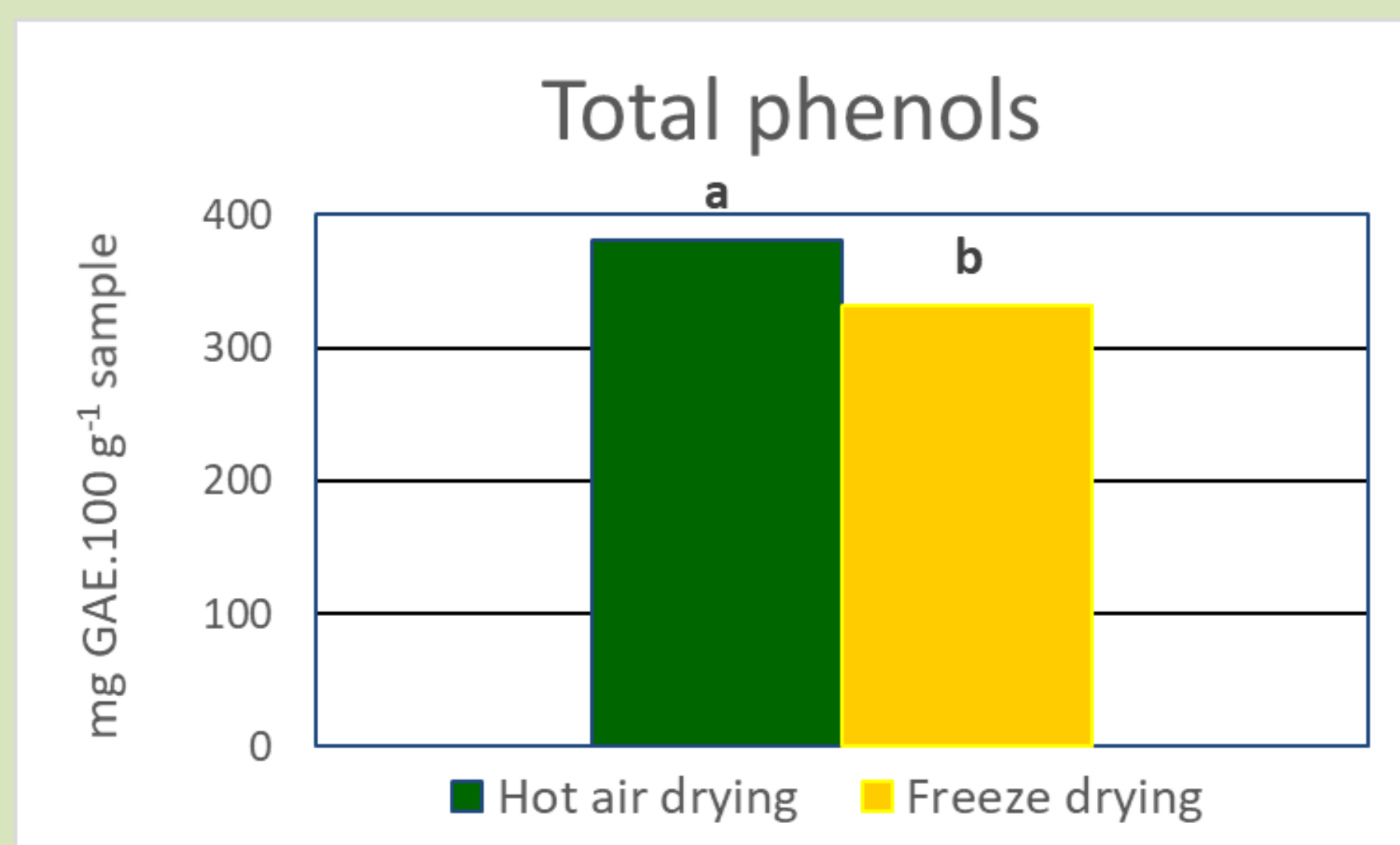


Fig. 1. Total phenols in diced dehydrated apples.

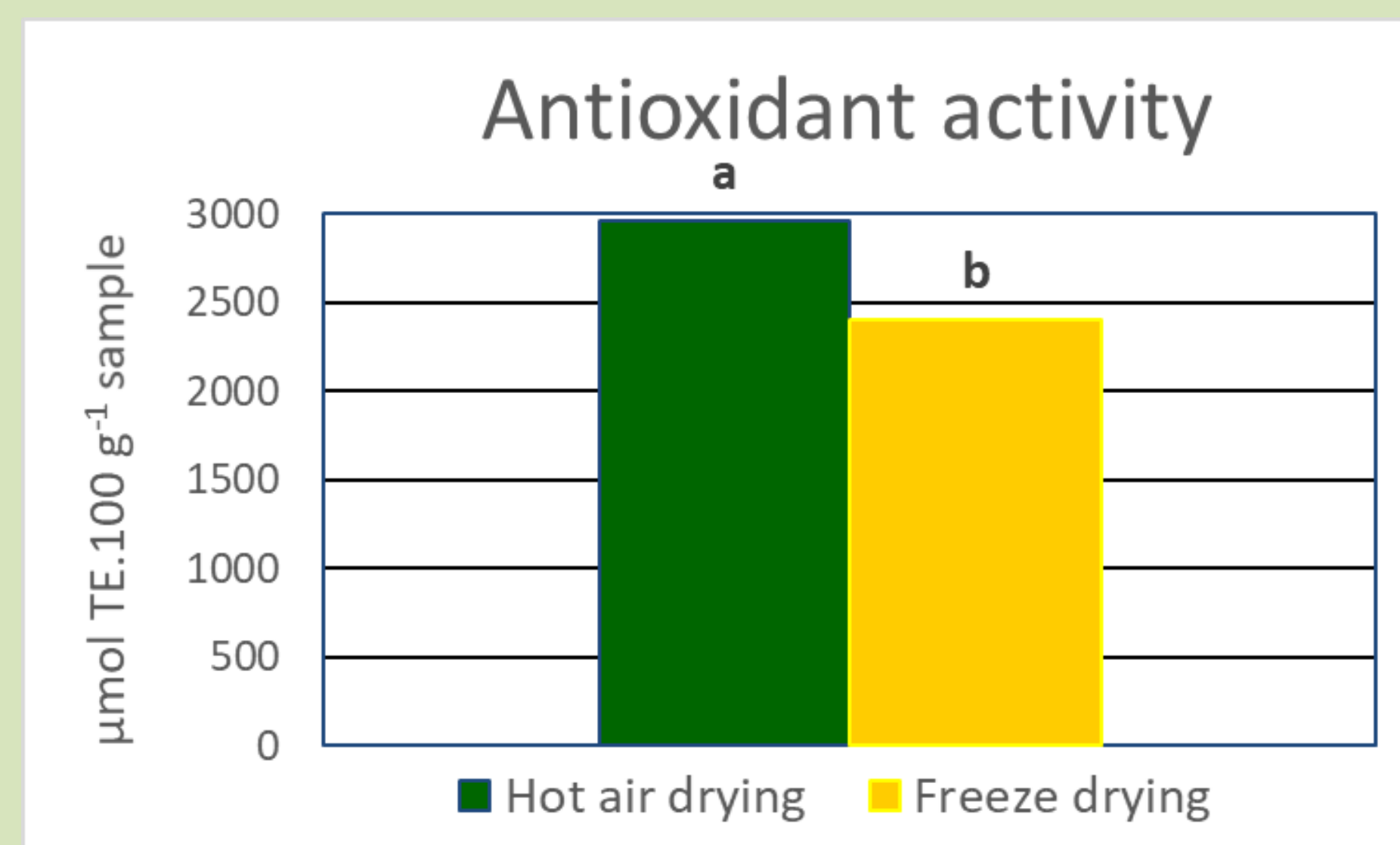


Fig. 2. Antioxidant activity in diced dehydrated apples.

- Total phenol and antioxidant activity values were significantly higher ($p \leq 0.05$) in the hot-air-dried samples which could be attributed to the formation of Maillard reaction compounds.
- The apples had an initial moisture content of $85.32 \pm 0.31\%$. After drying, the moisture content decreased to 25%, with durations of 2 and 24 hours for hot air drying and freeze-drying, respectively. After rehydration, the diced apples dried by hot air reached a moisture content of $72.18 \pm 0.01\%$ in 80 minutes, while the freeze-dried apples rehydrated to $85.21 \pm 0.68\%$ in 5 minutes.
- The color parameters L and a were significantly influenced ($p < 0.05$) by the drying method, with the hot air-dried sample exhibiting the lowest luminosity and greatest redness due to browning reactions.

CONCLUSION

While both methods allow for preserving diced apples, freeze-drying requires a higher investment cost and long processing times. However, it is the most appropriate option for preserving the quality in terms of the final product's appearance.