

Effects of conventional hot air dehydration and lyophilization on the total phenolic content and antioxidant potential of broccoli stalk powders

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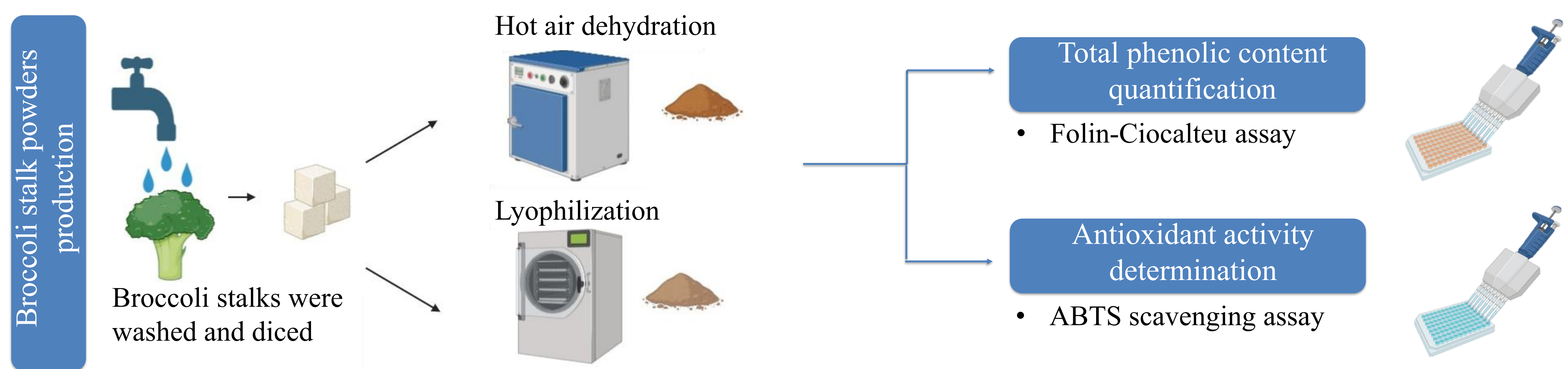
Introduction

The **valorization** of **agro-industrial byproducts** plays a key role in promoting **sustainability** and supporting the development of **functional foods** (Food and Agriculture Organization of the United Nations, 2019; Ramírez-Pulido *et al.*, 2021). **Broccoli stalks**, often industrially discarded, are a rich source of **bioactive substances**, particularly **phenolics**, with potential health-promoting effects (Yan *et al.*, 2023). Efficient **drying methods** can transform these byproducts into **high-value ingredients**, while **preserving** their **bioactive** potential (Ramírez-Pulido *et al.*, 2021).

Objectives

Evaluate the **impact** of two drying methods (conventional **hot air dehydration** and **lyophilization**) on the total **phenolic** content and **antioxidant** activity of broccoli stalk powders.

Methods



Results

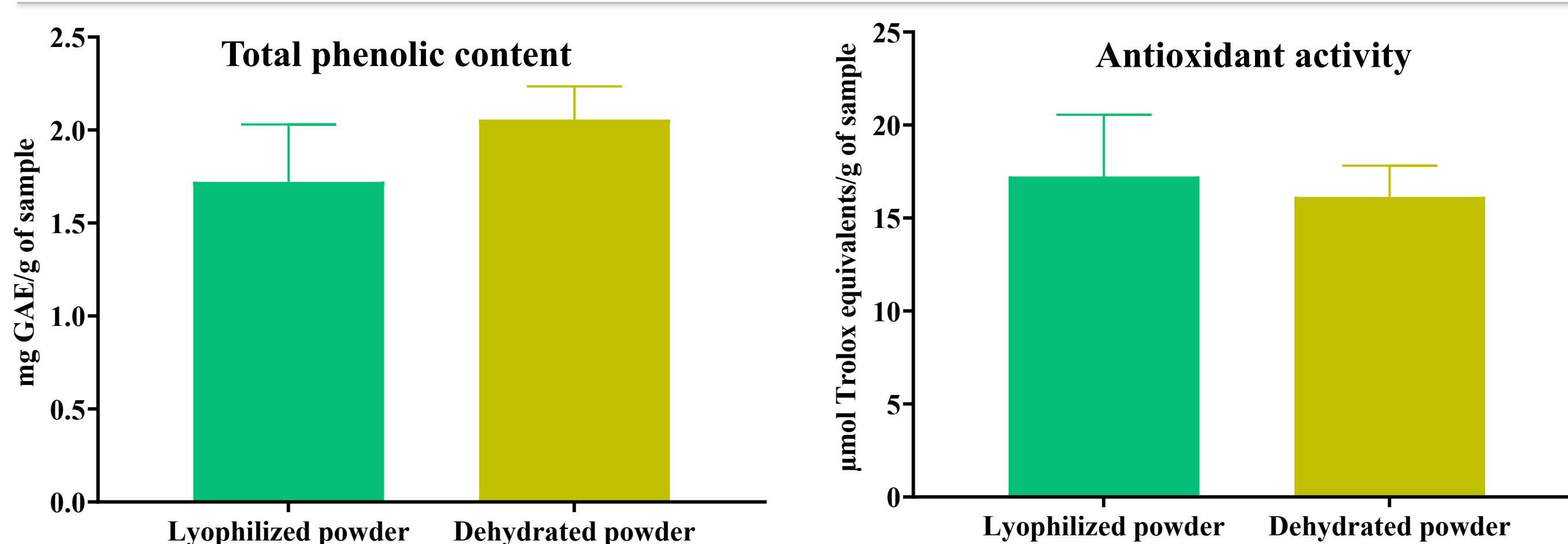


Figure 1. Total phenolic content of lyophilized and dehydrated broccoli powders expressed in milligrams (mg) of gallic acid equivalents (GAE) per gram (g) of sample

Figure 2. Antioxidant activity of lyophilized and dehydrated broccoli powders expressed in micromoles (µmol) of Trolox equivalents per gram (g) of sample

Both drying methods retained relevant levels of phenolic compounds and antioxidant activity.

Conclusions

This work reinforces the potential of broccoli stalks as sources of bioactive substances, especially phenolic compounds. Both drying methods enabled the preservation of bioactive content, fostering the development of functional ingredients and supporting circular economy practices through food waste reduction and sustainable byproduct utilization.

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SDGs framing



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