

## MICROWAVE COMBINED DRYING OF RED BEETROOT PUREE PRETREATED BY OHMIC HEATING

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**Abstract:** Ohmic heating is an advanced thermal food processing technique where heat is internally generated in a sample using the electric current. This provides rapid and uniform heating in the entire volume of the sample. This novel technique based on the electric field is resulting in less thermal damage in food. Ohmic heating has immense potential for achieving rapid and uniform heating in foods, providing microbiologically safe and high quality foods.

The influence of the ohmic heating pretreatment on combined microwave/convective drying of red beetroot puree was investigated.

The purpose of this study was to analyze the effectiveness of combined microwave (MW) drying methods with the ohmic heating (OH) pretreatment at 17.5 V/cm on the physical and chemical properties of red beetroot powder. The effects of ohmic heating pretreatment and subsequent microwave-convection drying (525W+100°C, 420 W+100°C and 315 W+100°C) were studied, including phenolic content, antioxidant activity, betacyanins and betaxanthins content and color. This study was conducted to develop and optimize the drying process of red beetroot using hybrid drying methods.

The variation of microwave power had reduced the drying time from 15 to 10 minutes. By increasing the microwave power from 315W to 525W it was observed the drying process intensifying sustained by the polyphenols content enhancing from 240 mg GAE/100 g dried sample to 270 mg GAE/100 g dried sample.

Concluding, the ohmic treatment at low electric gradients (17.5 V/cm) results in incomplete damage of material, preserving the native pigments of red beet.

### References

1. **Kaur R., Gul K., Singh A.K.** Nutritional impact of ohmic heating on fruits and vegetables – A review. *Cogent Food & Agriculture* 2016, 2: 1159000.
2. **Lebovka N.I., Shinkaryk M.V., Vorobiev E.** Drying of potato tissue pretreated by ohmic heating. *Drying Technology*, 2006, 24(5), page 601-608.