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## Effects of Different Drying Methods and Temperatures on the Bioactive Compounds in Purple Carrot Extracts

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### Abstract

This study investigated the effects of different drying methods (vacuum, ultrasound-assisted vacuum, and hot air) and temperatures (50, 60, and 70 °C) on the changes in bioactive compounds of purple carrot extracts. The amounts of gallic acid, caffeic acid, hyperoside, quercetin, myricetin, and rutin were evaluated using HPLC analysis. Drying methods, including vacuum (V50, V60, V70), ultrasound-assisted vacuum (USV50, USV60, USV70), and hot air (E50, E60, E70), significantly influenced the phenolic compound content. The results showed that caffeic acid and rutin levels were particularly higher in vacuum and ultrasound-assisted drying methods. The lowest rutin content was observed in fresh carrots (3.76 µg/mL), whereas significant increases were found in USV70 (20.54 µg/mL) and V70 (16.80 µg/mL) samples. Caffeic acid content reached the highest levels in V50 (9.62 µg/mL) and USV50 (10.42 µg/mL) methods. Although compounds like hyperoside and quercetin were present in lower amounts, their levels varied depending on the drying temperatures. These findings highlight the significant impact of drying methods and temperatures on preserving and enhancing bioactive compound levels. This provides an opportunity to develop targeted production strategies for functional food applications using processed products such as purple carrots.

**Key Words:** *Bioactive compounds, Phenolic profiles, Polyphenols, HPLC, Purple Carrots*

