



EFFECTS OF SUPERHEATED STEAM DRYING ON THE ANTIOXIDANT AND ANTI-TYROSINASE PROPERTIES OF SELECTED LABIATAE HERBS

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ABSTRACT

In this study, the antioxidant and anti-tyrosinase properties of fresh, commercial dried (CD) and superheated steam-dried (SS-D) Labiatae herbs were analysed and evaluated. Superheated steam drying (SSD) was performed at 150°C and 200°C for 5, 10 and 20 min. Fresh and CD rosemary had the highest phenolic contents and the strongest primary antioxidant activities of free radical scavenging and ferric reducing power. Fresh spearmint, CD peppermint and CD oregano displayed the strongest secondary antioxidant activity of ferrous ion chelating ability. Based on total phenolic content and free radical scavenging, three broad categories of SS-D herbs were recognized i.e. herbs that showed declines for all the drying regimes (thyme and peppermint); those that showed declines or remained unchanged (marjoram and oregano); and those that showed all three traits of increment, declines or unchanged (rosemary, sage and spearmint). Tyrosinase inhibition was strongest in fresh sage, fresh rosemary, CD thyme and CD rosemary. Reported for the first time, SS-D rosemary, SS-D thyme and SS-D marjoram showed enhanced anti-tyrosinase properties for all the drying regimes. SS-D marjoram was the most exciting as tyrosinase inhibition was not detected in fresh samples. This study on the antioxidant and anti-tyrosinase properties of selected Labiatae herbs has provided some useful insights on the effects of SSD. The drying technique can be used for the production of tyrosinase inhibitors, which are increasingly used in medicines for treating pigmentation disorders, in cosmetics for skin whitening, and in food products for inhibiting browning.

Keywords:

Labiatae herbs;
Superheated steam drying;
Phenolic contents;
Antioxidant;
Anti-tyrosinase.