عنوان مقاله:

Variability in Color and Phytochemical Properties of Hemp (Cannabis sativa L.) upon Drying Techniques; An Opportunity for Industrial Products

محل انتشار:

مجله گیاهان دارویی و محصولات فرعی, دوره 13, شماره 1 (سال: 1403)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

The drying process can preserve herbal products against pathogens and improve their shelf life and quality; however, drying techniques have different effects on the appearance and quality of final products. Accordingly, the present study assessed various drying techniques viz. sunlight, shade, oven (۴۵, ۵۵, and ۶۵ °C), vacuum (۴۵, ۵۵, and ۶۵ °C), and microwave (۲۰, ۴۰۰, and ۶۰۰ W) on color and phytochemicals characteristics of hemp (Cannabis sativa L.) plants with respect to total phenolic content (TPC), cannabidiol (CBD), and tetrahydrocannabinol (THC), chlorophyll (Chl) content, and color properties using multivariate analysis. The results revealed that the highest CBD and THC were observed in plants dried in a microwave at ۴۰۰ and ۶۰۰ W, respectively. The TPC reached the highest amount in shade drying conditions and was followed by microwave at ۴۰۰ W, and oven at ۴۵ °C. Although Chl b mainly remained unchanged, Chl a represented the lower amount by increasing the temperature of drying methods, especially over ۶۵ °C. The lightness (L*) and brightness (b*) of fresh leaves were higher than dried samples, while over ۶۵ °C possessed their minimum amount of L*. Agglomerative hierarchical clustering (AHC) showed three different clusters were determined as microwaves at ۲۰۰, ۴۰۰, and ۶۰۰ W were placed in a distinguished cluster. Finally, this experiment suggested shade drying or minimum temperatures of the oven and vacuum techniques to reach constant color and phytochemicals, while microwaves can be recommended for CBD and THC, which can be useful in food and pharmacological industries.

کلمات کلیدی:

Cannabidiol, Drying methods, Microwave, brightness, Clustering