



University of Zabol
Graduate school
Faculty of Agriculture
Department of Horticulture science and Landscape

The Thesis Submitted for The Degree of Master of Science
(In The Field of Horticulture science)

Title

Investigating the effect of different drying methods on drying time and some appearance and biochemical properties of artichokes, liquorice, asparagus and Oenothera medicinal plants.

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Abstract:

To dry medicinal plants according to the type of active ingredients in the plant (alkaloids, essential oils, phenols, flavonoids, etc.) should choose a suitable method. In addition to the effect of the drying process on the shelf life of products, the method used for drying has a significant effect on the yield and content of secondary metabolites of medicinal plants. The purpose of this study is to use different drying methods (shade, sun, oven and microwave) and its effect on drying time and some appearance and biochemical properties of artichokes, licorice, evening primrose and asparagus. For this purpose, the plants were first cultivated in the Agricultural Research Institute of Zabol University. At the beginning of flowering, the plants were harvested and their initial weight was recorded immediately. The samples were then dried by shade, sun, oven at 70 ° C and 3 levels of microwave power. After this step, the color characteristics of the samples were determined by imaging using image processing methods and then some biochemical properties of the samples such as essential oil content, carbohydrate content and phenol were measured. The results showed that different drying methods had a significant effect on all studied traits. Among the four plants studied (artichoke, evening primrose, licorice, asparagus), the highest amount of carbohydrates, phenol, flavonoids were obtained in the shade drying method and the lowest amount was obtained in the microwave drying method of 900 watts. Also, the longest drying time was obtained in the shade drying method. Also, the highest amount of carbohydrates and the longest drying time in licorice were (11.87 mg) and (5740 minutes), respectively. The highest amount of phenol was obtained in artichoke plant (156.28 mg) and finally the highest amount of flavonoids was obtained in asparagus plant (61.29 mg). Among the three methods of drying shade, sun and oven (70 degrees), the best index l^* , b^* and a^* is related to the drying treatment in the shade, so that the index l^* for asparagus (26.2), artichoke (29.5), evening primrose (31.62) and licorice (32.7) were obtained which showed a significant difference with fresh samples of plants. In the microwave drying method, the highest l^* value was related to the 900 watt microwave power and the lowest value was related to the fresh plant.

Keywords: Biochemical properties, Drying, Microwave, Oven, Sun, Shade.