

Charotorn Phowng 2014: A Study of Optimum Hot-Air Drying for Sliced Ginger. Master of Science (Agricultural System Technology), Major Field: Agricultural System Technology, Department of Farm Mechanics. Thesis Advisor: Assistant Professor Donludee Jaisut, Ph.D. 98 pages.

This work was to study the effects of 2 pretreatments, blanching and dipping in ascorbic acid solution, and drying temperatures on the drying kinetics and the qualities of the dried ginger slices in terms of TPC, antioxidant activities (as assessed by DPPH and ABTS methods), color and SEC. The TPC in un-pretreated and pretreated ginger slices increased markedly after drying. A greater increase in TPC was obtained for pretreated samples due to the inactivation of browning enzymes responsible for the reduction of phenolic compounds. The DPPH and ABTS radical scavenging activities of ginger slices had a positive correlation with TPC. The DPPH and ABTS radical scavenging activities of the dried samples were higher than those of the un-dried samples, justifying the use of dried ginger for antioxidant properties. Dried ascorbic acid solution dipped ginger exhibited the highest values of TPC and antioxidant activities while dried blanched ginger powder had the lowest value of total color difference. However, the dried blanched sample had lower TPC and antioxidant activities than the dried ascorbic acid solution dipped sample, probably due to the loss of TPC into the hot water during blanching. The tested drying temperatures, ranging from 60 to 80°C, did not affect the TPC, antioxidant activities and the color of the ginger samples. However, drying at higher drying temperatures required a shorter drying time. Moreover, the pretreatment did not affect SEC. The SEC of drying at 80°C was slightly lower than that of 60°C. To produce ginger powder, pretreatment of ginger slices by dipping in 0.1% ascorbic acid solution prior to drying at a temperature of 80°C is recommended.

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Thesis Advisor's signature