

Effect of Microwave Assisted Vacuum Drying and Cabinet Drying Techniques on the Quality Attributes of Pineapple

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Dehydrated organic fruits have gained high demand in the export market. The objective of this study was to evaluate the effect of cabinet drying (CD) and microwave assisted vacuum drying (MW-VD) techniques on the quality attributes of osmotically pretreated pineapple. Fruit slices (50±5mm×30±5mm×5±1mm) were blanched for three minutes before dipping into the 50 °Brix sugar solution for four hours. Osmotically pretreated fruit slices were placed into the driers at different time temperature combinations. Several trials were carried out to both CD (50 °C/ 22 h, 65 °C/20 h, 60 °C/24 h) and MW-VDA (40 °C /40min, 45 °C /20min, 40 °C / 50 min, 40 °C/ 1h). Physical appearance, moisture content and water activity measurements were used to select the optimum conditions of driers for drying process. Half set of osmotically pretreated fruit slices were dried at 60 °C for 24 h using CD and remaining set of fruit slices dehydrated at 40 °C for one hour using MW-VD. Physicochemical analysis such as moisture content, titratable acidity, water activity, total soluble solid, vitamin C, pH, porosity, rehydration ratio, color and microbiological (Total Plate Count) analysis were carried out for dehydrated pineapple slices. Pineapple slices dehydrated by MW-VD were significantly low ($p < 0.05$) in moisture content (2.34±0.10% - dry basis) and total plate count (4.55±4.55 CFU/g), while high in acidity (3.54±0.35 mol/L), vitamin C (0.04±0.0024%), porosity (51.30±2.25%), rehydration ratio (1.37±0.07) and total color difference ΔE (26.63±4.53) than pineapple slices dehydrated by CD. Other parameters of pineapple fruit slices dehydrated by two techniques did not vary significantly ($p > 0.05$). Results of this study proved that MW-VD technology can be used to produce better quality dried fruit products of pineapple than that of CD technology. Further studies are necessary to address the suitability of commercial level/large scale production.

Keywords: Cabinet drying, Microwave assisted vacuum drying, Osmotic dehydration, Pineapple