

Quality Attributes of Osmotic Pre-Treated Microwave Dried Pineapple Slabs

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Osmotic dehydration has received greater attention in recent years as an effective method for preservation of fruits and vegetable product. Microwave dried pineapple slabs were given osmotic pre-treatments before drying. The osmotic pre-treatment was performed by using sugar as an osmotic agent, with different concentrations of 45, 55 and 65 oBrix, 2% CaCl₂ and three hours of immersion at room temperature. Osmosized slabs were microwave dried at 450 W for three drying time of 15, 20 and 25 minutes, respectively. The effect of osmotic pre-treatments on moisture content, rehydration ratio, shrinkage ratio, colour and textural changes along with the influence of treatments on carotene, vitamin C and ash content were analyzed. Pineapple slabs with osmotic pre-treatment of 45 oBrix and 25 minute of microwave drying gave the best quality attributes. Microbiological analysis of osmotic pre-treated microwave dried pineapple slabs was observed up to 63 days at an interval of seven days at room temperature.

Physicochemical parameters of fresh pineapple and their changes due to osmotic pre-treatments at different drying times were evaluated. The results showed that, the moisture loss from pineapple slabs significantly increased with increase in sugar concentration and time of drying. Low rehydration ratio of the osmosized pineapple slabs reflected high sugar impregnation thus better self life. Minimum shrinkage ratio of pre-treated pineapple slabs reflected better solids gain. The treated pineapple slabs showed more loss of vitamin C content (10.25-15.58 mg/100g) during 25 minutes of microwave drying than the untreated samples (21.37 mg/100g) while better retention of carotene content was observed. The ash content of the osmotic treated samples were found higher than the untreated samples and found significantly ($p < 0.05$) increased with the increase in drying time. Apart from these, the osmotic pre-treatment resulted minimum colour change over untreated samples. Textural properties of the treated pineapple slabs were also found better (841.00-1607.46g) than

the untreated samples (731.06-960.42g). The result of the microbiological analysis showed pre-treated microwave dried pineapple slabs exhibited longer shelf (63 days) life than untreated sample (14 days).

Conclusion

Combination of osmotic pre-treatment with microwave drying found to be effective in extending the shelf life of dried pineapple slabs manifold. Osmotic pre-treatment prior to microwave drying can reduce the drying time while producing high-quality pineapple slabs with less colour change, better texture and high sensory qualities. The effects were significant more particularly on qualities attributes, although a lower retention of vitamin C was observed in osmotic pre-treated samples due to water leaching of the nutrient and heat treatment while retention of carotene content was higher than the untreated pineapple slabs. Further investigation may be conducted to study the effect of osmotic pre-treatments on the porosity and microstructure of pineapple slabs.

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