

The study of sorption Isotherms for varied temperatures of Cocoyam

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Abstract

The shelf life of materials is an important property to be investigated; this is due to the fact that exposure to certain process and environmental conditions could lead to the deterioration of their physicochemical properties. As a result, the sorption isotherm and physicochemical properties of solid cocoyam (Size: 95microns) were studied to reveal its suitability in food systems and storage stability. The static gravimetric method was adopted for varied temperatures and relative humidities. The equilibrium moisture content showed differences in the amounts of moisture adsorbed while the sorption isotherm curves obtained revealed typical type II isotherm. Chemical properties determined were moisture content, crude protein, fiber, fat, lipid and ash as well as the carbohydrate content. Also, the physical properties investigated were the water absorption capacity, viscosity and gelatinization temperature. The GAB and BET models were found to describe the data reasonably after their experimental data were fitted with the application of nonlinear regression. The sorption isotherms study revealed that the relative humidity in the neighborhood of 65-97% would be ideal for the storage of the dried solid in moisture tight packaged materials. Monolayer moisture content of dried cocoyam ranged from 0.018192-0.028366g/g dry solid and 0.02156-0.028922g/g dry solid for BET and GAB models respectively. These values suggest better storage stability at lower ambient temperatures. The results obtained from this study shows that cocoyam will store longer at lower temperature and relative humidity.

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Biography:

Sunday Iji, has completed his B.Eng in Chemical Engineering from Federal University of Technology, Minna, Niger State and is about to round up his Masters Studies in University of Uyo, Akwa Ibom State, Nigeria. His Masters study is still in the field of Chemical Engineering. He is 32years and presently the Director of Entrepreneurship Development Centre at Federal