

## **Water Sorption Isotherms and Crispness of Fried Yam Chips in the Temperature Range from 293K to 313K**

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### **Abstract**

Water sorption isotherms of fried yam chips were determined using a static gravimetric method with saturated salt solutions in the range of water activity between 0.22 and 0.85 at 293, 303 and 313K. Four sorption models namely GAB, Peleg, modified Mizrahi, and BET were fitted with the sorption data generated. The GAB model followed by Peleg and modified Mizrahi models were found to best represent the experimental data in the  $a_w$  range of 0.22–0.85. However, the BET model was more applicable between  $a_w$  range of 0.22–0.55. The adsorption isotherm of fried yam chips clearly showed the influence of temperature, decreasing the moisture content at a fixed water activity value with higher temperature. The net isosteric heats of sorption of water were estimated by applying the Clausius–Clapeyron equation to the adsorption isotherms at different temperatures. The net isosteric heat of sorption was observed to be decreasing as moisture content increases. Samples stored in desiccators of 0.44 and 0.55  $a_w$  at 303 and 313K, respectively, were rated higher in terms of textural properties investigated.