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Experimental and Mathematical Description of Sorption Isotherms and Thermodynamic Properties of Salted and Dried African Catfish (Clarias gariepinus)

Sobukola, Olajide / Popoola, Ibironke / Munoz, Loreto

Citation Information: International Journal of Food Engineering. Volume 8, Issue 2, Pages –, ISSN (Online) 1556-3758, DOI: 10.1515/1556-3758.2683, May 2012

Publication History:

Published Online: 2012-05-22

Sorption isotherms and thermodynamic properties of brine salted and dried (BSD) and dry salted and dried (DSD) African catfish in the water activity (aw) range (0.33-0.85) was determined and compared at 25, 30 and 40C using the static gravimetric method of saturated solutions. Five sorption models: GAB (Guggenheim-Anderson-de Boer), BET (Brunauer-Emmett-Teller), Kuhn, Adam and Shove and Henderson were fitted with the experimental sorption data obtained. Curves for both samples followed the type III BET classification scheme. Equilibrium moisture content (EMC) decreased with increase in temperature at low and intermediate aw (0.33-0.65) while there was an inversion of this trend at higher aw (0.75-0.85)

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with DSD samples having higher values at the same experimental conditions. GAB model predicted best with the monolayer values varying between 0.047 to 0.054 kg/kg db for BSD samples and 0.047 to 0.052 kg/kg db for DSD samples. Salting technique affected significantly the properties investigated

Keywords: African catfish; salting; drying; sorption isotherms; heat of sorption; differential entropy

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