

Mathematical modelling of moisture sorption isotherms by using BET and GAB models

Abstract

Fish cracker is a popular local fish based snack in Malaysia. Besides the raw form which can be consumed directly, it is always eaten in the dried form. Thus study of moisture sorption isotherm of fish cracker is essential as to predict appropriate drying and storage conditions consecutively to enhance its nutrients, taste and aroma. In this study, the moisture sorption isotherms of fish crackers from two manufacturers M1 and M2 were developed by using a static gravimetric method at temperatures of 30, 40 and 50°C and water activity (aw) range of 0.04 to 0.80. It is a relationship between equilibrium moisture content (EMC) and aw at a specified temperature. The isotherms exhibited a sigmoid shaped which classified as type II in Brunauer-Emmett-Teller (BET) classification. The increase of temperature decreased the EMC of fish crackers while increase of aw increased the EMC. There was no significant difference of EMC between manufacturers M1 and M2. The moisture sorption isotherms of fish cracker were fitted into predicted isotherms by Guggenheim-Anderson-de Boer (GAB) and BET models. GAB model was found to be the best fit model of fish crackers' moisture sorption isotherms as compared to BET model.