Editorial Board

For Authors

- Authors Declaration
- Instruction to Authors
- Guide for Authors
- Copyright Statement
- Submission

For Reviewers

- Guide for Reviewers
- Reviewers Login

Subscription

Czech J. Food Sci.

Blahovec J., Yanniotis S.:

'GAB' generalised equation as a basis for sorption spectral analysis

Czech J. Food Sci., 28 (2010): 345-354

The transformed sorption isotherm (represented by the ratio of water activity and moisture content (d.b.) versus water activity) was approximated by polynomials of 2nd – 6th order. It is shown that the relative derivative of the transformed equation expresses the deviation of the sorption isotherm from the linear relationship between the moisture content and water activity either to the sorption isotherm of the Lagmuir's type (the positive relative derivative) or to the sorption isotherm of the solution type (the negative relative derivative). The relative derivative plotted versus water activity then serves as a spectral indicator of the prevailing sorption mechanism. Spectral analysis is applied to sorption isotherms of potato and wheat starches and some fruits and vegetables. For starches, the differences in the spectral indicator

between resorption and desorption as well as the effect of starch processing (gelatinisation and hydrolysis) on spectral analysis are discussed. The role of spectral analysis in the assessment of the prevailing sorption mechanism (surface vs solution sorption) is demonstrated for fruits and vegetables.

Keywords:

sorption; isotherm; GAB; food; approximation; polynomial; water; activity; spectrum

[fulltext]