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Apparent surface area of selected meal extrudates

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abstract We have investigated water vapour adsorption and calculated the specific surface area of meal extrudates. The Brunauer-Emmet and Teller (BET) equation was used to analyse experimental data on water vapour adsorption and to calculate the apparent surface area (Sapp.) from both adsorption and from desorption branches of the adsorption isotherm. Values of Sapp. estimated from adsorption isotherms ranged: from 214 to 294; from 202 to 210; and from 199 to 232 m²g⁻¹ for potato, wheat and rice extrudates, respectively. If the desorption isotherms have been used, the ranges of SBET were 327-347, 274-281, and 287-295 m²g⁻¹, respectively. We have observed linear relationship between adsorption- and desorption-apparent surface areas. In the case of rice extrudates the correlation coefficients, R², were very high. Similar linear relationship has been found for potato and wheat extrudates, but correlation coefficients were lower. The surface area, S, is directly proportional to the monolayer capacity Nm and the value of apparent surface area obtained from desorption data may be treated as a measure of the amount of strongly bounded water. Therefore the desorption surface area seems to be a better parameter to characterize the solid surface of meal extrudates.

keywords water vapour adsorption, specific surface area, potato, and wheat and rice extrudates