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## Determining moisture content in pasta by vibrational spectroscopy

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### Abstract

Pasta aside from bread is the most consumed cereal-based product in the world. Its taste and cooking ease makes it the basis of many cuisines. The pasta dough formed by mixing flour and water is extruded through an extrusion die to mould the appropriate pasta form and is dried to obtain a stable product. The concentration of moisture in the pasta dough is a one of key parameters determining the final quality of the product. Monitoring the moisture content of pasta after extrusion is also critically important. It enables a selection of suitable drying conditions that ensure the appropriate parameters of pasta, such as texture, color and taste, are met. A method for the quantitative determination of moisture content in pasta dough and in pasta based on the partial least squares treatment of infrared spectra registered using a single-reflection attenuated total reflectance diamond accessory is described. Results of a similar quality were found using models derived from near infrared spectra obtained in a diffuse reflectance mode and slightly worse based on Raman spectra. Relative standard errors of prediction calculated for moisture quantification by ATR/NIR/Raman techniques amounted to 2.54/3.16/5.56 % and 2.15/3.32/5.67 %, for calibration and validation sets, respectively. The proposed procedures can be used for fast and efficient pasta moisture quantification and may replace the current, more laborious methods used.

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**Keywords:** pasta; moisture content; quantitative analysis; multivariate calibration; vibrational spectroscopy

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