



Mineral and Water Content Analysis of Corn flour: Implications for Nutrition and Health

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Abstract: Corn flour, also known as cornmeal or maize flour, provides essential nutrients being a multipurpose ingredient with important nutritional benefits like: high magnesium, phosphorus, and potassium content, an excellent source of dietary fiber and carbohydrates, antioxidants (lutein and zeaxanthin), high vitamin content (A, B6, thiamine, niacin, riboflavin, folate). Being naturally gluten free it is an ideal food for people with celiac disease or gluten intolerance. Corn flour allows these persons to enjoy baked goods and other foods without the risk of gluten-related health issues. The results show a big variation in potassium (5270-12771 ppm) and zinc (28-108 ppm) content and also in water content (9.6 -15.7%).

Keywords: fingerprints, quality control, trasability, gluten free diet

• Introduction

The aim of the study was to analyze the water content and mineral composition of different assortments of corn flour available on the Romanian market in order to obtain the fingerprints of the products.

• Material and method

The mineral content of the flour samples was performed using XRF Hitachi XMET8000 portable spectrometer and the water content using thermogravimetric method.

Creating fingerprints based on mineral composition and water content supports regulatory compliance and quality assurance requirements, helping producers in ensuring product safety, consistency, and authenticity.

• Results and discussions

The results show a big variation in potassium (5270-12771 ppm) and zinc (28-108 ppm) content and also in water content (9.6 -15.7%).

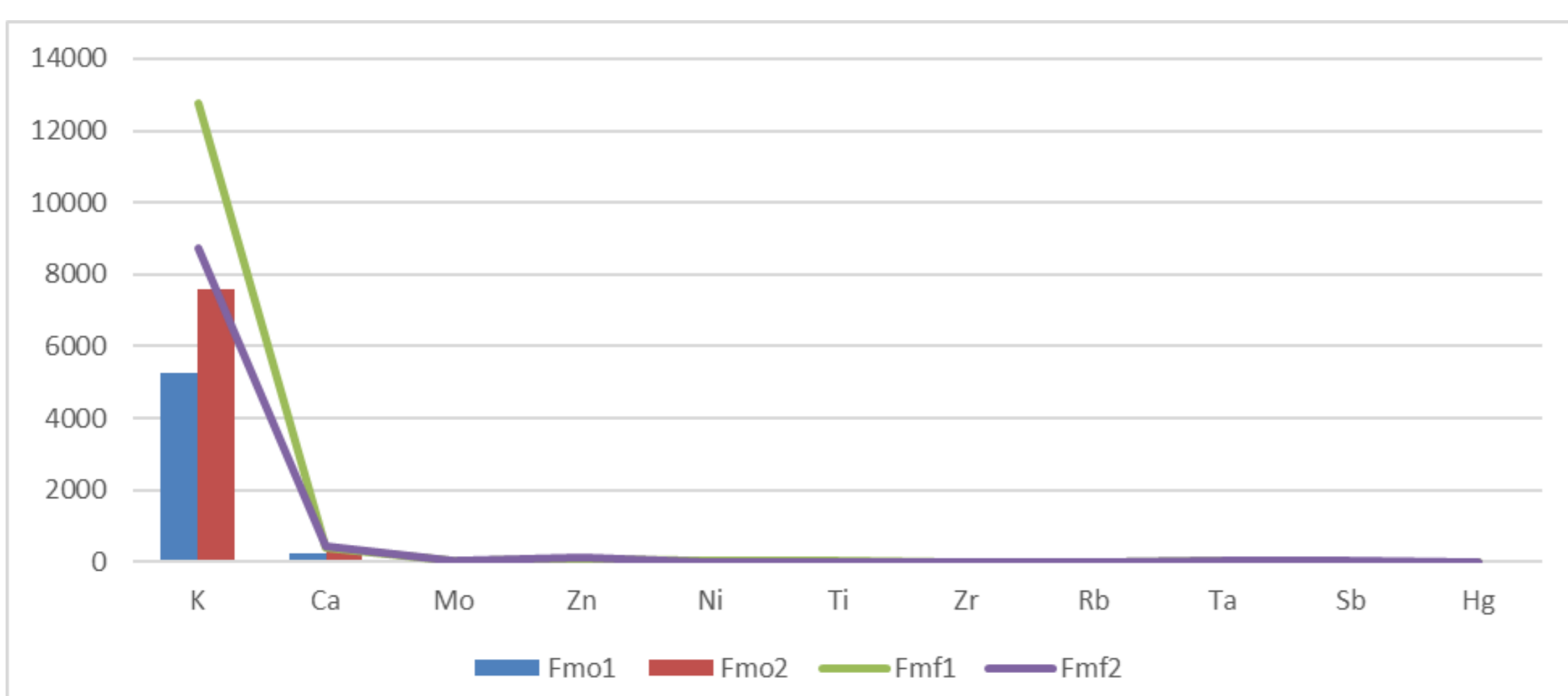


Figure 1. Samples XRF fingerprint

Legend: fmo=ordinary corn flour; fmf=fine corn flour; pm=corn flour bread

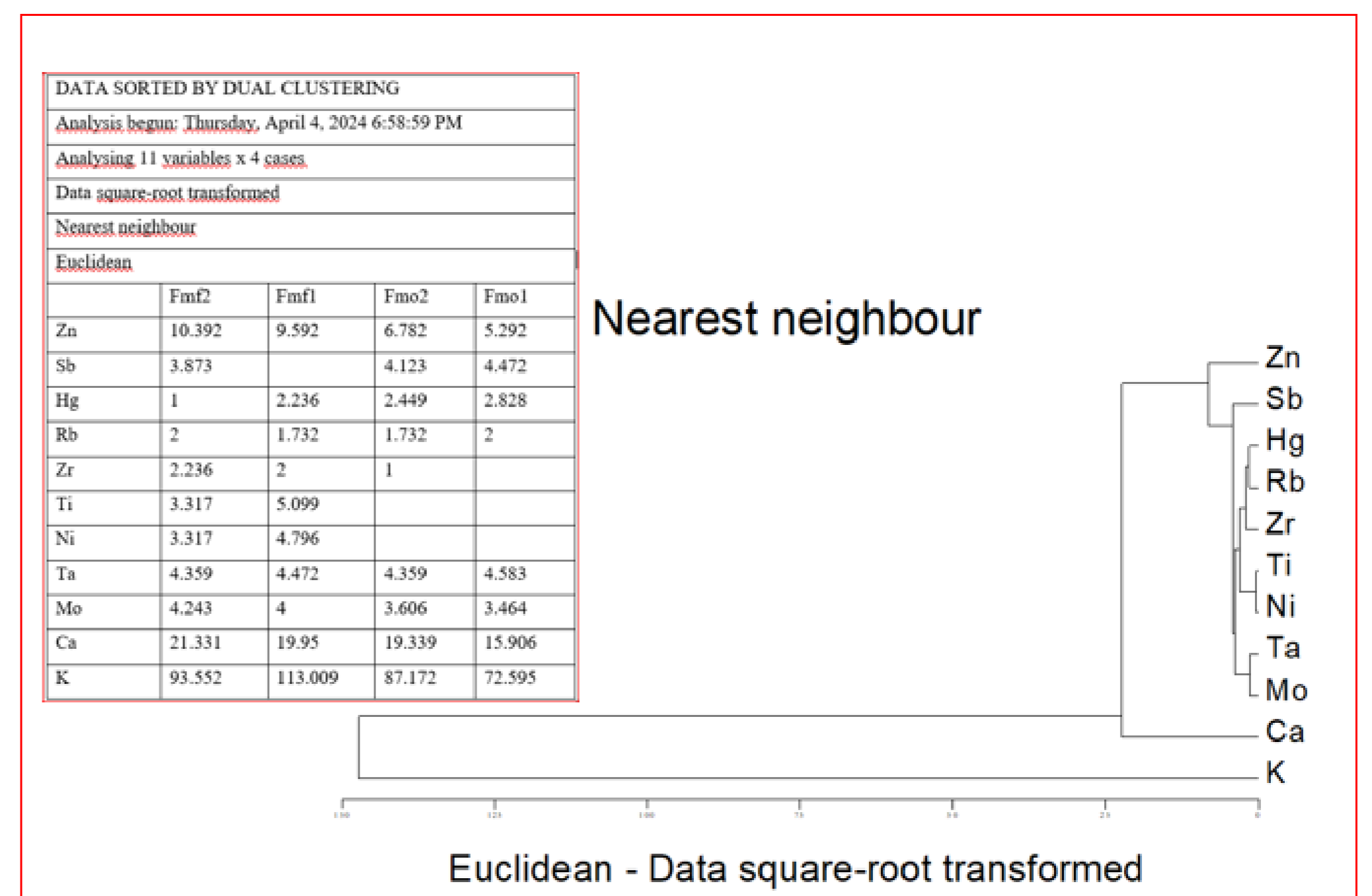


Figure 2. Cluster analysis of samples mineral content
 Legend: fmo=ordinary corn flour; fmf=fine corn flour; pm=corn flour bread

Conclusions

Analyzing water content in corn flour is essential for maintaining product quality, ensuring food safety, optimizing processing efficiency, preserving nutritional value, and enhancing storage stability.

By understanding the mineral composition of corn flour, producers can offer a product that contributes to a balanced diet and meets the diverse needs of consumers.

Acknowledgement: The acquisition of XRF Analyzer was financed by Interreg-IPA Cross-border Cooperation Romania-Serbia Programme, through the project "Modern technologies for monitoring land covered with waste in order to restore their initial use", 2019-2021, code e-MS: RORS 365.