

## Physical-chemical analysis of different types of flours available in the Romanian market

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The physical-chemical characteristics of different types of flours are essential for understanding their composition, nutritional value, and functional properties as well. The aim of this research was to identify the variability of the different types of wheat flours available in Romania. In this study 39 different wheat flours were selected, and the following parameters were analyzed in the laboratory: moisture content, ash content, gluten content (wet and dry) and wet gluten spreading.

The tested flours were classified into four different classes according to their ash content: 480 (ash content 0.48%) (N=11), 550 (0.55%) (N=9), 650 (0.65%) (N=8), 1100 (1.1%) (N=11). Mathematical and statistical methods were used to analyze the obtained results: descriptive statistics, box-plot, Spearman correlation and hierarchical cluster analysis. The results revealed that moisture content varied between 9.5 and 11.8%. In terms of ash content, the lowest and highest measured values were 0.427- 2.04 g/100 g. The average wet gluten content of the studied flours varied between 30 and 32%, while the average dry gluten content was 12.8%.

The findings indicate that the moisture content of all examined flour samples was within permissible levels for extended storage, aligning with established standards. Gluten is a key and essential parameter for bread making because influences the dough mixing and baking properties. The mineral content, represented by ash content, is influenced by cereal type and milling process, with wheat's ash content ranging between 1.5% and 2%. Flours with high wet gluten content (>34%) can be used to improve the properties of lower quality flours. Further studies are necessary in order to determine the possible health effects of different cereal varieties.