

Influence of composition and drying process on macromolecule properties in wholemeal semolina pasta

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In recent years, the growing interest in healthy eating habits and awareness of the health benefits associated with whole grain consumption has led to an increase in consumer preferences for whole grain products such as wholemeal semolina pasta.

The preparation of pasta at the industrial scale involves several steps from semolina to dough formation, dough extrusion, and, finally, drying of the pasta products. During the whole process the constitutive semolina components are subjected to many modifications that affect quality of the final product in terms of physicochemical, nutritional and sensorial aspects [1].

In this frame, two wholemeal semolina with different protein content (12% and 15%) and different gluten quality were selected to produce dry pasta in a pilot-scale plant with the final goal of deeply investigating, at a molecular level, the relationship between the composition/processing of the product and nutritional aspects. In this work, we present the first step of such an investigation which consisted in the characterization of the two matrices themselves as well as their cooking behaviour. Specifically, two different drying methods, namely at low (maximum 60°C) and high (maximum 90°C) temperature, were applied to each semolina pasta sample after extrusion. DSC and TGA methodologies were used to assess the conformational stability changes and solvation state of macromolecules in raw material, uncooked and cooked pasta, the overall protein organization was investigated by differential solubility and front-face fluorescence, whereas rheological methods were used to assess pasting properties [2].

Acknowledgment: project PRIN 2022, 2022SCYHWK, “Combined Approaches to expLOre the Impact of wholemeal semolina and pasta processing on MEtabolic RespOnses (CALIMERO)”

Bibliography

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