

12. Functional properties of pumpkin seed flour for use in bakery products

A. Shevchenko

National University of Food Technologies

Products for mass consumption, in particular bakery products, are mostly have low nutritional value due to insufficient content of essential nutrients in their composition. In addition, there is an increase in cases of intestinal diseases all over the world, in particular, irritable bowel syndrome, in case of which it is recommended to consume products with a high content of dietary fiber and protein [1].

Pumpkin processing products contribute to reducing the risk of inflammatory processes of the gastrointestinal tract, and are also recommended for diet therapy in the case of these diseases [2].

When establishing recommendations for the use of food ingredients in the composition of products, their main functional properties must be studied, namely, the ability to interact with water and fat molecules and stabilize dispersed systems. Therefore, such functional properties of pumpkin seed flour were determined: water absorbing capacity (WAC), water holding capacity (WHC), fat absorbing capacity (FAC), fat holding capacity (FHC), emulsifying ability (EA) and emulsion stability (ES) (Fig.1).

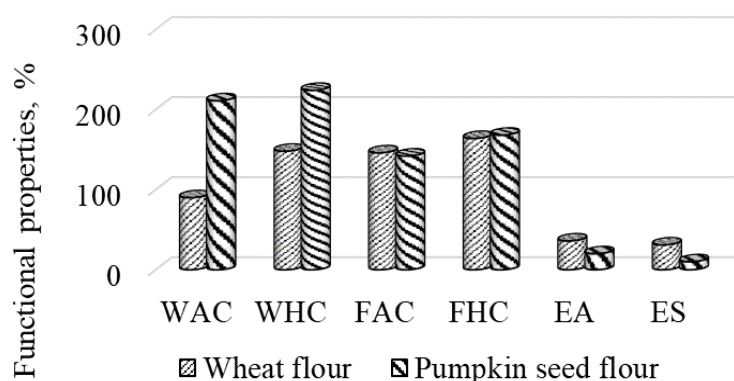


Fig. 1. Functional properties of pumpkin seed flour and wheat flour

Water molecules act as plasticizers and soften the structure of the dough. Dough with less water content than optimal causes an uneven distribution of the protein network, which forms the framework of bread. Dough with a higher water content than optimal has more aggregated proteins which are

less bound together. The water-absorbing and moisture-retaining capacity of pumpkin seed flour is higher than wheat flour, so it is needed more water to form elastic dough.

It is predicted that the moisture will be well retained, and therefore the gluten subunits will be properly connected to each other and form a strong framework.

References:

1. Shevchenko, A., Drobot, V., Galenko O. (2022). Use of pumpkin seed flour in preparation of bakery products. *Ukrainian Food Journal*, 11(1), 90-101. <https://doi.org/10.24263/2304-974X-2022-11-1-10>.
2. Forbes, A., Escher, J., Hébuterne, X., Kłęk, S., Krznaric, Z., Schneider, S., Bischoff, C. (2017). Clinical nutrition in inflammatory bowel disease. *Clinical Nutrition*, 36(2), 321-347. <https://doi.org/10.1016/j.clnu.2016.12.02>