

## **THE USING OF HEN EGGSHELLS POWDER AT BREAD FABRICATION**

Nicoleta PLATON<sup>1</sup>  
Vasilica-Alisa ARUŞ<sup>1</sup>  
Ana-Maria GEORGESCU<sup>1</sup>  
Ileana-Denisa NISTOR<sup>1</sup>

<sup>1</sup>, „Vasile Alecsandri” University of Bacau, Faculty of Chemical and Food Engineering, Catalysis and microporous materials laboratory, 157 Marasesti Str., Bacau – 600115, Romania

\*Corresponding author: Nicoleta Platon, nicoleta.platon@ub

The present study focuses on chicken eggshells - derived components as a renewable resource. Chicken eggshells are industrial by-products that have been considered waste, hundreds of thousands of tons of chicken eggshells are disposed in landfills every year in the US alone. According to the United States Department of Agriculture and National Agricultural Statistics Service, the country produced nearly 92 billion eggs roughly 465,000 tons of eggshells waste in just one year. This massive amount of waste could potentially be utilized in different applications, they can offer great material for industrial and structural applications. Eggshells are natural bio-ceramic composites, with a combination of both inorganic and organic components that have exceptional characteristics [1].

This paper presents the preparation of white bread with different hen eggshells powder additions. The addition of eggshells powder added to the white bread preparation was up to 2% and an increasing in bread quality was on elasticity and humidity starting with 0.5% eggshell powder addition. After 24 h, all physic-chemical properties of bread crust and crumb in the case of fortified bread with calcium have a positive effect.

By using these natural materials, we want to achieve the three following aspects. We all want that shelf life of a product to be as long as possible and also the negative effects of additives to be eliminated in the same time. Through this research study we want these natural materials to play the role of additives. In addition to additive role, we want foods enrichment (additional) in mineral substances for public health. Also we all know that soils are poor in minerals and grains default. Through the large amounts of calcium and magnesium content in eggshells and then in bread, a fortification with minerals of white bread is aimed.

The nutritional value of bread is an important element to the daily ration of food and the subject of wide research in the field of nutrition. This value is conferred not only energy intake (calories), based on their increased groove-sugars (carbohydrates), proteins and lipids (fats) but also by the contribution of all components in those products, representing shapes that are easily assimilated by the human body.

The final product obtained has a pleasant taste and smell, but also better developed and interaction of calcium from eggshell powder conditioning bread freshness.

**Keywords:** *Eggshell powder, bread, nutritional value, calcium, natural additive*

### **References**

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