

The Impact of Hydrothermal Treatments on Technological Properties of Whole Grains and Soriz (*Sorghum oryzoidum*) Groats

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Abstract

Cereals and cereal products are the basic element in ensuring the food security of the population. Most cereal-based foods contain gluten. Nutritional therapy is the only treatment for people with gluten-related disorders. No gluten-free products are manufactured in the Republic of Moldova, and the imported ones are sold at very high prices. In this context, Moldova is an unexplored field and research is required. The paper investigated the impact of hydrothermal treatments on whole grains and sorghum groats. It was found that whole grains and sorghum groats have a cooking time of about 130 and 40 minutes, respectively, which can be reduced by about 2 times by prior hydration in water. Hydration media and their concentrations (NaCl solutions; sol. NaHCO₃ and C₆H₈O₇ concentrations 0.5%; 1.0% and 2.0%) differently influence the cooking time, mass, volume and firmness of the grains.

Keywords

Hydrothermal Treatment, Culinary Properties, Soriz (*Sorghum oryzoidum*), Whole Grains, Firmness, Gluten Free

1. Introduction

Cereals and cereal products are the basic element in ensuring the food security of the population. The World Health Organization recommends that most energy come from cereals. Increasing the consumption of cereals, especially whole grains, is an important goal, thanks to its protective role against diabetes and other metabolic diseases, as well as against cancer [1].

Although nutritional trends in recent decades have shifted to whole grains, refined cereals, especially white flours and white bread assortments, are often

preferred to whole grain foods due to the general desire of consumers to benefit from quality products high volume, which led to the selection of wheat varieties with high gluten content to obtain voluminous products with high porosity and long-term freshness [2].

Consequently, today we are facing a rising epidemic of gluten-related disorders such as celiac disease, allergy and gluten sensitivity [3]. They are characterized by atrophy of the epithelium of the small intestine and by malabsorption resulting from this phenomenon [4]. As a result, celiac disease can cause growth retardation, infertility, anemia, stomatitis, dermatitis, hypocalcemia, etc. People who show disorders related to gluten consumption, are forced to follow a gluten-free diet, which may have different weight, depending on the specific conditions of the disease [5]. Gluten-free products are an example of reverse functional foods, in which gluten is excluded and not included, like other constituents. In fact, gluten-free products are currently an area in full swing, and the main representatives are cereals and cereal derivatives [6].

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