Influence of the Different Addition Levels of Buckwheat Flour on Pasta Wheat Flour

Simona MAN\(^1\), Adriana PĂUCEAN*\(^1\), Sevastiţa MUSTE\(^1\), Crina MUREŞAN\(^1\)

\(^1\)Faculty of Food Science and Technology, University of Agricultural Sciences and Veterinary Medicine, 3-5 Mănăștur street, 3400, Cluj-Napoca, Romania
*Corresponding author, e-mail: adriana.paucean@usamvcluj.ro

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**ABSTRACT**

Pasta products have been staple foods since ancient times in many countries all over the world. In this study, the standard wheat flour pasta formulation was modified using buckwheat flour at levels of 10, 15 and 25 %, to obtain a new added value product. The Pastas quality was tested by assessing the chemical and cooking properties. Wheat pasta supplemented with 25% buckwheat flour, demonstrated good quality; total protein content increased from 9.6 to 17.15%, ash and cellulose have the same trend, while moisture and starch were decreased. The optimal cooking time for the pasta without buckwheat flour was longer than for the pasta with 25% buckwheat flour while the volume of the pastas with added buckwheat flour, increased from 279% to 327%. Present study indicated that the addition of 25% buckwheat flour does not negatively change the quality of the pastas.

**Keywords**: pasta, buckwheat flour, cooking quality, protein content.

**INTRODUCTION**

Consumers’ attention in recent years has been directed to nutritional and health aspects of foods. The application of new ingredients in the basic product formulation could result in products with higher nutritional value and new sensory quality (Šimurina et al. 2009). Pasta products are consumed all over the world, and they are frequently manufactured from wheat flour, which is known to be the best raw material suitable for its production (Nedeljković et al., 2014). Pastas have a special place in humans alimentation due to the advantages they present regarding the nutritional value, the low costs, the possibilities of cooking them and the high level of conservation and attractive sensorial characteristics (Pop et al. 2014). Therefore, pasta is recognised as good matrix for supplementation with various health beneficial supplements. Buckwheat (*Fagopyrum esculentum*) is an important pseudocereal known as a dietary source of protein containing high levels of essential amino acids, starch and dietary fibres, essential minerals and trace elements (Nedeljković et al., 2014). Moreover, buckwheat has been reported to possess higher antioxidant activity than the most frequently used cereals (Kreft et al. 2006). High phenolics content, especially rutin, contributes to the increased functionality of foods. The substitution of wheat flour in commonly used pasta with buckwheat flour can fortify pasta with proteins, dietary fibres, vitamins and minerals with acceptable effects on sensory and cooking quality (Schoenlechner et al. 2010).

**AIMS AND OBJECTIVES**

In order to found new nutritionally perspective pasta recipe, the replacement of 10,15 and 25% wheat flour with buckwheat flour in pasta formulation was studied, with the aim to determine the effect of buckwheat addition on pasta cooking quality.

**MATERIALS AND METHODS**

The raw materials (wheat flour type 000, buckwheat flour and eggs) used in these experiments have been purchased from markets of
specialized stores. The standard formulation of the pasta comprised wheat flour, buckwheat flour in different levels, eggs and water. The lamination and cutting of the dough was performed by a manual pasta machine (SONESTA SA-350). The dough with 4 mm thickness was cut to a size of 15 cm long and 7 mm wide, constituting pasta. Then, the pasta was dried at 55°C for 24 hours for quality analysis, according to the standards of AOAC (Association, 2000).

RESULTS AND DISCUSSION
The addition of buckwheat flour in pasta improved its sensory and nutritional qualities. The values of analyzed parameters for pasta with added buckwheat flour are shown in Table 1:

The pasta samples had similar moisture content but different contents of other chemical parameters. The pastas containing buckwheat flour are superior in protein, ash and cellulose content than pasta wheat flour due to higher content of these nutrients in buckwheat flour compared to wheat flour (Nedeljković et al., 2014). These obtained results were expected as buckwheat flour was reported to contain higher protein and mineral content than wheat flour. The optimal cooking time for the pasta without buckwheat flour was longer than for the pasta with added 25% buckwheat flour, while the volume of the pastas with added buckwheat flour increased from 279% to 327%. Results are consistent to Jambrec et al. (2011) and Nedeljković et al. (2014) who showed that the addition of buckwheat flour up to 20% caused a decrease in optimal cooking time of pasta. The same authors explained this phenomenon by physical disruption of the gluten matrix and overall low density that provides a path for water absorption into pasta containing buckwheat flour which results in a shorter cooking time.

CONCLUSION
Wheat pasta supplemented with 25% buckwheat flour demonstrated good quality. This study showed that the partial substitution of wheat flour by buckwheat flour did not negatively affect the chemical and cooking properties of the pastas, demonstrating that it is possible to develop pasta with 25% buckwheat flour of reasonable quality and high protein.

REFERENCES