Effect of process cooking on dietary fiber content in lentil (*Lens culinaris*) from Poland

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INTRODUCTION

Legumes, including lentils are characterized by a high nutritional value, but their importance in Poland is low. Leading producers of lentils are Canada, India, Turkey and the United States [1]. In Poland, only recently we appreciate its importance in the diet. Lentil is one of the richest sources of vegetable protein, fiber, vitamins C, PP and group B, and also contains calcium, phosphorus, iron, and folic acid. It has a beneficial effect on spleen, pancreas and stomach, it strengthens the activity of the kidneys and adrenal glands. It lowers cholesterol and prevents sudden increases of blood sugar [2].

Dietary fiber is a very important element of a sustainable, healthy and effective diet. Consumption of large amounts of this ingredient gives a lot of benefits to our health. According to WHO daily intake of fiber for adults should be at the level of 25-40 grams a day. Soluble fiber - SDF (pectins, hemicellulose, gums, mucilage, β-glucans) forms a kind of jelly-like gel having a large volume. It has the ability to capture the toxic compounds. Insoluble fiber - IDF (cellulose, lignin, some hemicelluloses) having the ability to absorb water. It reduces the energy value of the diet and gives a feeling of satiety [3].

As a result of the different processing conditions of food changes in the contents of both SDF and the IDF may occur. Knowing the content of the different fractions of dietary fiber in processed lentils we can influence energy intake related to the consumption of this product.

EXPERIMENTAL METHODS

The research material consisted of lentil seeds coming from Poland (Anita and Tina variety). The seeds have been subjected to different technological conditions (such as traditional cooking, cooking in a pressure cooker and microwave). Soluble and insoluble dietary fiber were determined according to AOAC 993.43 “Total, Soluble, Insoluble Dietary Fiber in Foods” and AACC Method 32-07.01 “Determination of Soluble, Insoluble, and Total Dietary Fiber in Foods and Food Products”. Total dietary fiber content of the seeds was calculated as a sum of IDF and SDF values.

RESULTS AND DISCUSSION

Based on the research it was found that TDF ranged within 19.69 g/100g db. (raw lentil Tina) to 22.05 g/100g db. (raw lentil Anita). Traditional cooking for 45 min in both lentil varieties resulted in significant ($p<0.05$) increases in TDF and IDF and decrease in SDF. A significant increases in TDF and IDF during cooking may result from the formation of resistant starch [4, 5]. The highest decrease (approx. 9%) of content of IDF was observed in the case of Anita processed by using a pressure cooker for 8 min. In the case of Tina use of microwave heating for 30 min resulted in a decrease of IDF by approx. 20%. However, in both varieties subjecting to microwave heating caused an increase of SDF content of about 40-50%.

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