

Short communication

DIETARY FIBERS CONTENT IN THIRTEEN BULGARIAN VEGETABLES

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ABSTRACT

Dietary fibers play an important role in preventive nutrition against a number of diseases of our time. The knowledge of their contents in foods enables their more effective involvement in prevention. The aim of this study is to determine the fibers content in the most popular Bulgarian vegetables. The highest amounts of fibers are found in the red turnip (5.86 %) and in the leek (5.23 %). The total fibers content is almost similar in the turnip (4.38 %) and in the potatoes (4.66 %) as well as in the French beans (3.28 %) and in the green garlic (3.39 %). The presented results will be entered in the Bulgarian foodstuff composition database. This information is also of importance for compilation of healthy diets and dietary regimes and will facilitate the activities of various specialists such as dietologists, nutritionists and technologists.

Keywords: total dietary fibers (TDF), soluble dietary fibers (SDF), insoluble dietary fibers (IDF), foods, vegetables.

INTRODUCTION

The relationship food – health has been studied for a long time. The recent scientific achievements in this field explain also the possible biological mechanisms of this relationship. Among the variety of facts and data, dietary fibers seem to occupy their position as a preventive factor at certain disease particularly cardiovascular disease, several common cancers and other chronic disorders [1-3]. First of all the dietary fibers are found mainly in the vegetables. As the insoluble fiber are those that do not dissolve into the water, the intestinal colon bacteria can not use them as a food source. On the other hand the soluble fibers dissolve in the water forming a gelatinous substance in the bowel. The soluble fibers, among the other benefits, seems to bind up cholesterol allowing it to be eliminated with the stool [4]. If enough they can lower the blood cholesterol 10-15% [4, 5]. There is numerous study providing fibers effect on the function of the gastrointestinal system. They provide physical bulk, increase the water content [6, 7] and diet rich in fibers and low in fat reduces the risk of overweight and helps to maintain the desirable blood glucose level [4].

EXPERIMENTAL

Thirteen vegetables were analyzed for soluble and insoluble dietary fibers. For each product 5 samples were collected from different Bulgarian regions. Each mean sample was subjected to two independent analyses. The analyses of SDF and IDF were performed according to BDS ISO 5498-81 after ISO modified method for determination of raw fibers described in the Manual “Methods harmonized with the EU requirements”, vol.1, 1998 [8]. The limit of quantification of the method is 0.2 %, RSD = 9.5%.

RESULTS AND DISCUSSION

Table 1 shows the mean content of SDF and IDF with standard deviation and content of total dietary fiber.

The highest amounts of fibers are found in the red turnip (5.86 %) and in the leek (5.23 %). The total fibers content is almost similar in the turnip (4.38 %) and in the potatoes (4.66 %) as well as in the French beans (3.28 %) and green garlic (3.39 %); as in the red

Table 1. Dietary fibers in 13 typical Bulgarian vegetables.

PRODUCT	TDF, %	SDF, % MEAN ± SD	IDF, % MEAN ± SD
Cabbage	3.14	1.70 ± 0.22	1.44 ± 0.31
Cabbage, red	2.74	1.24 ± 0.22	1.50 ± 0.22
Cucumbers	1.49	0.69 ± 0.59	0.80 ± 0.14
French beans	3.28	1.40 ± 0.28	1.88 ± 0.24
Garlic green	3.39	1.59 ± 0.21	1.80 ± 0.23
Leek	5.23	3.71 ± 0.49	1.52 ± 0.28
Onion	3.86	1.22 ± 0.13	2.64 ± 0.32
Onion, green	2.97	1.17 ± 0.42	1.80 ± 0.28
Potatoes	4.66	1.86 ± 0.17	2.80 ± 0.19
Spinach	2.50	1.37 ± 0.31	1.13 ± 0.18
Tomatoes	1.94	0.92 ± 0.15	1.12 ± 0.13
Turnip	4.38	2.39 ± 0.10	1.99 ± 0.22
Turnip, red	5.86	2.02 ± 0.26	3.84 ± 0.16

*TDF – Total Dietary Fibers, SDF – Soluble Dietary Fibers, IDF – Insoluble Dietary Fibers, SD – Standard deviation, N=5, where N is the number of the samples.

cabbage (2.74 %) and the green onion (2.97 %). The lowest total dietary fibers content is found in the cucumbers (1.49 %) and in the tomatoes (1.94 %).

The highest amount of SDF is found in the leek (3.71 %) followed by the turnip (2.39 %) and the turnip red (2.02 %). The soluble fibers content is almost similar in the French beans (1.40 %) and the spinach (1.37 %), as well as in the red cabbage (1.24 %) and the onion (1.22 %). The highest amount of IDF is found in the red turnip (3.84 %) followed by the potatoes (2.80 %) and the onion (2.64 %). The insoluble fiber content is similar in the red cabbage (1.50 %) and the leek (1.52 %), as well as in the spinach (1.13 %) and the tomatoes (1.12 %). The analytical data for dietary fibers in these thirteen vegetables show a big variety and definite specifics expressed in SDF and IDF values within the total dietary fibers content.

CONCLUSIONS

The British Nutrition Foundation has recommended a minimum fiber intake of 12-24 g/day for healthy adults. The ADA recommends trying to get most of your dietary fiber from foods you eat, as an important part of consuming variety, nutrition, synergy between nutrients, and possibly phytonutrients [8]. High

intake of dietary fiber has been linked to a lower risk of heart disease in a number of large studies that followed people for many years [9-11].

The results of this study will be useful for the people who wanted to regulate their weight control problems in the right direction; for nutritionists who prepared a healthy and rich diet.

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