Bulletin of the *Transilvania* University of Braşov
Series II: Forestry • Wood Industry • Agricultural Food Engineering • Vol. 9 (58) No.2 - 2016

DIETARY FIBER ROLE AND PLACE IN BAKING PRODUCTS

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Abstract: *Governed by whatever means lifestyle, especially diet and nutrition category, all misunderstood, this paper addresses the problem realistically existing or added dietary fibre in bread and bakery products. Dietary fibres are ballast substances found only in fruits, vegetables and cereals consumed rationally and help the body to prevent and even treat some digestive, cardio-vascular and even incipient forms of cancer or diabetes. So, using soluble or insoluble dietary fibre in bread and bakery products turns into this category of commodities avoided products with a significant contribution on the health of the consumer.*

Key words: *dietary fibre, bakery products, nutrition, health.*

1. Introduction

Bakery products are some most consumed foods of all time. Bread and bakery products are the basis for nutritional pyramids regardless of the time period that we refer to or from the areas in which it applies.

Since ancient times, the bread was considered a sacred food. Consumed daily by the majority of the population, has a beneficial effect on the health status of the population.

By their very nature complex, bakery products prepared from wheat flour, gives energy, proteins, and many other micro and macro elements.

Dietary fibre inserted into bakery products provides benefits on the health of the heart, gastrointestinal pain, reduce the risk of various cancers. Also, dietary fibre have the role of ensuring a good intestinal transit, preventing constipation, reducing fat absorption from the digestive tract, as well as favouring the absorption of toxins [3], [10].

Bakery products are some most consumed foods of all time. Their evolution has experienced various stages of development, reaching today a growing diversity. The current trend is to create products beneficial to health, thus destroying the myth that bread, especially white is not healthy. According to recent studies, given the sensory perception of consumers, a product in which fibre controls a white background in detriment of a dark product is better accepted by

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them.

Contemporaries and their lifestyles are strongly influenced by scientific and technical progress of recent years. Everything related to progress influences both lifestyle and diet of the present generation. Food consumed today are given a set of procedures and treatments to be easily prepared and consumed and to provide consumer pleasant sensations and alleviating hunger, without taking into account, however, the energy needs of the body and repercussions adverse health.

In this context, are multiplying cases of people suffering from diseases of nutrition, diabetes, heart disease, hypertension, and overweight people. As a result of these alarming statistics, experts in nutrition, and most of the scientific research in the field of medical sciences and food industry are looking for solutions to develop new foods-foods category of functional and to educate the public, so that the return to a healthy diet, to be soon accepted by consumers [16].

Scientific and consumers easy access to information led to the rediscovery of the close link between diet and health of humans, forcing the scientific world in the field to create food decisive able to influence the health of consumers. These foods are endowed with properties for the prevention and amelioration of the effects of various non-communicable chronic diseases - type two diabetes, obesity, cardiovascular diseases etc. [5].

Development of functional foods has generated the need to use new ingredients for food, ingredients role in maintaining and improving the health of consumers. Thus, dietary fibre position was reassessed, placing the value of their physiological role. Obviously, functional foods can improve the health of people with chronic diseases, but they were not designed specifically for this purpose, being designed rather to tables below for preventive and not curative.

Bakery products designed as functional foods are intended specifically for persons who need and can be consumed by healthy people in for the prophylaxis of various diseases.

2. Objectives

This paper aims to summarize the features and benefits of dietary fibre to improve the health of the consumer. This paper focuses their research towards the possibility of developing new bakery as functional products.

Because bread and bakery products is in most parts of the world based human consumption, which has an important role in ensuring and maintaining the health of consumers, the priorities of the main actors in this industry are focused now on creating and developing new bakery products to ensure and contribute substantially to reducing the suffering from heart disease, colon cancer and coronary heart disease [13], [14].

3. The Role and Place of Dietary Fibre in Baking Products

In order to define the fibre account shall be taken of the assertion made in 1985 by Hugh Trowell, according to which the fibre is “a combination of compounds, constituents of plant tissue, which are normally recorded by people and that cannot be degraded by digestive enzymes” [15].

One of the most recent definitions of dietary fibre, is made by FAO during the years 2007, saying that they are “plant cell wall polysaccharides. The term should be reserved to polysaccharides cells of vegetables, fruit and whole grains, having established health benefits, but rather than synthetic oligosaccharides isolated or in some cases unique physiological effects".

It should be remembered that the benefits they bring health dietary fibre were brought to light only in the last century.

Until then, they were long considered worthless substances, keeping the generic name of "ballast substances" with negative effects on people with digestion problems due to interference with the absorption of nutrients useful. Research conducted in the field but were shattered this myth and highlighted the beneficial properties of these substances and consumed properly can bring a range of benefits.

From the mid-nineteenth century, the fibres were recommended increasingly more to treat colorectal cancers with the specification that they are not drugs.

With the developments in scientific research area were set several definitions that various researchers have given these substances. Thus, in the 1970s, dietary fibre were defined as Burn, plant cell, including complex carbohydrates and lignin whose main characteristic is that it can not be digested by enzymes in the small intestine of existing human organism. This definition excludes non-digestible carbohydrates but animal or synthetic [3].

Dietary fibres are essential nutrients required for proper digestion of food, a well functioning digestive tract and have an important role in prolonging satiety.

Depending on their role, dietary fibres are divided into two main categories:

Insoluble fibre (cellulose, lignin and hemicelluloses certain) have an important role in the volume and intestinal transit time;

Soluble fibre (pectin, hemicelluloses, gums and mucilage) have the ability to form stable gels, thus slowing down the rate of absorption of glucose, thereby preventing the increase in blood glucose levels immediately after ingestion etc.

The main types of dietary fibre are found in varying amounts into food products as detailed in Table 1 [12].

Table 1

Main categories of dietary fibre

Fibre type	Food sources	[g/100 g]
Soluble fibre	Whole wheat flour	10
	Wheat bran	13
	Oilseeds	8
	Vegetables	3
Insoluble fibre	Oat	9
	Peas	5
	Beans	9
	Apples	4
	Citrus	2
	Carrots	3

Depending on the source, fibre are divided into: dietary fibre - the best known are the cellulose in plant cell walls, oats and barley, beta-glucans, hemicelluloses, insulin and oligofructose present in onions and artichokes, pectin from fruit berries, lignin in the cell walls of woody plants and seeds, resistant starch pulses and bananas, but can occur due to food processing or cooling and reheating; functional fibre - carbohydrates isolated on beneficial physiological effects; total fibre - are fibre containing both categories mentioned [3].

3.1. The Benefits of Dietary Fibre

Definitions and classifications of dietary fibre can be drawn following their roles incumbent: increase satiety by stimulating the gastric acid secretion in the stomach, and the discharge delay; combat constipation; prevent colorectal cancer; reduce digestion and absorption of glucose; lowers cholesterol. [

Studies have shown that in order to be beneficial, the dietary fibre should be consumed in amounts that vary depending on the age, sex, special needs, etc.

Thus, the recommended intake of fibre ranges from 25 to 40 g / day, based on details in Table 2 [8].

Table 2

The daily dietary fibre

Consumer	Age [years]	Recommended intake of fibre [per day]
Children	-	20g
Men	> 50	30 g
	< 50	38 g
Women	> 50	21 g
	< 50	25 g

Benefits the body by dietary fibre appear because they are not digested or absorbed by them. Thus, dietary fibre are beneficial in: regulating body weight, fight obesity - are hydrated fibre in the gut and quickly create satiety, hunger disappears, the intestinal flora is detoxified; reducing blood cholesterol by inhibiting the absorption of fat; preventing colon cancer; combating constipation and haemorrhoids; combat irritable bowel syndrome; diabetes - decreasing glucose absorption [9], [11].

Much of fibre intake are found in foods, especially in baked goods currently consumed come from grains - wheat, rice, corn, rye, oats, barley, sorghum, and millet; oilseeds; fruit - apples, grapes, lemon, mango, oranges, peaches, and vegetables - carrot, garlic, potato.

From the quantitative point of view, wheat, rice, corn, rye, oats, barley, sorghum and millet grain are the most important and have a wide variety of usage. Grain products are an essential part of the daily food for most of the world's population, providing 30-60% of the energy required.

3.2. Bakery Products Rich in Fibre

The baking used in a high percentage of insoluble fibre derived from cereals consisting of cellulose fibre, groats or meal of cereals - especially those from wheat fibre from the structure of the cell walls of the soybeans, peas, sugar beet , citrus and a lower percentage of soluble fibre - gums. Wheat bran contains a dietary fibre 40-50% hemicelluloses consisting of cellulose and lignin. Compared with processed flour are used in a ratio of 5-35%, the proportion varying according to the amount of fibre required and the final destination of the product [2].

3.3. The Dietary Fibre Sources that may be used in Baking

Dietary fibre from fruits is an accessible version adopted by producers who are in search of ingredients with high nutritional value, co fruits and vegetables are one possible option. According to research by Gorinstein, Zachwieja, regarding apples, the highest amount of fibre to the whole fruit is contained in the pulp and peel. Interestingly, the research, they found that the highest percentage of the total fibre content of the fruit is found in apple peel apple - 0.91% [3].

The phytochemicals present in the composition of the apples were associated with the status of benefit for health - the proliferation of cancer cells, slowing down the oxidation of lipids and cholesterol lowering.

These phytochemicals considered beneficial manifest their effects outside by reducing the incidence of chronic diseases common among the Western population - heart disease, obesity, and cancer.

If fibre derived from grapes, recent studies show that grape cakes are a very important source of fibre needed daily diet.

These are derived from grape compounds which contain cellulose, pectins and hemicelluloses small amounts.

Several researchers have studied the content of fibre needed in the daily diet of ten varieties of grapes.

Among citrus, lemons stands, whose fibre content is about 14g / 100g, derived from fruit peels compared to 7,34g / 100g

of fruit contained clean. The total content of insoluble fibre is 9.04g / 100g, and soluble fibre content is 4,93g / 100g.

Another category of citrus, orange represented, constitutes an important source of dietary fibre, whose determination to constitute the subject of another study, after which determined the fibre content of orange peel.

Researchers have concluded that the fibre contained in the orange peel is about 57% of the total dietary fibre, 47.6% insoluble fraction and the soluble fraction was 9.41%.

Dominant insoluble fraction is the percentage of the total dietary fibre, providing health benefits such as regulating bowel movements.

Peaches, as an important source of dietary fibre, were investigated, leading to the conclusion that they have a total fibre content ranging from 30.7 to 36.1%. Separating the values obtained in the two groups, it was concluded that a rate of 23.8% is represented by the insoluble fibre and soluble fibre is 12.3% [1].

It was also analyzed the composition of the "waste" of mango represented by fruit peel reached full maturity and peel the mango fruit has not reached full maturity, elaborating conclusion that mango is an important source polyphenol.

It was studied polyphenol content of different species of mango, considering the study so mature fruits and berries that have not reached full maturity. The results led to the conclusion that present an amount of 109.7 mg / 100 g peel the mango fruit which has not reached full maturity [1].

Among vegetables, there is a significant source of the dietary fibre - carrots.

Researchers surveyed the carrot cake - by-products obtained from extraction of carrot juice. The total amount of fibre of carrot cake was estimated to be 63.6% 50.1% 13.5% insoluble fibre and soluble fibre.

A remarkable fruit from the perspective of dietary fibre content is mango. According to research compiled last time, it was concluded that a large amount of dietary fibre contained mango is found in its bark. Ajila, Leelavathi and Prasada Rao estimated a rate of 51.2% dietary fibre intake. [1] This percentage is composed of 19% soluble fibre and 32% insoluble fibre.

Regarding vegetables, in terms of fibre content are distinguished a number of them such as garlic and potatoes.

In contrast to broccoli and carrot, garlic is typically underestimated in terms of its health benefits. Dietary fibres are present in different amounts in different substrates of the structure of garlic.

Researchers have analyzed the content of dietary fibre, taking into account its whole, with all its substrates, in its outer coating to the core, the study performed on three species of garlic.

It has been found that most of the total amount of dietary fibre is present in the retrieved frame of the outer casing - 68.3%, and the lowest amount was found in the middle of it - 11.6%. Also, the high level of insoluble dietary fibre has been found in the outer covering structure - 66.6%, the lowest amount found in the middle of garlic [12].

4. Conclusions

Dietary fibres are ballast substances found only in fruits, vegetables and cereals consumed rationally and help the body to prevent and even treat some digestive, cardio-vascular and even incipient forms of cancer or diabetes.

So, using soluble or insoluble dietary fibre in bread and bakery products turns into this category of commodities avoided products with a significant contribution on the health of the consumer.

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