

STUDIES ON OBTAINING HIGH NUTRITIONAL VALUE PRODUCTS FROM WHEAT GERM

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Abstract

The aim of this work was to create products with many qualities: with a very high nutritional value, very pleasant, very easy to find, buy and eat and many people to like it. Sweet products like HALVA are very pleasant dessert and many people like it. Wheat germs are important source for many nutrients. Almonds and walnuts also have a very high nutritional value. So we create 8 different kinds of halva products made from roasted and unroasted almonds and walnuts, wheat germs, white egg, sugar and cocoa. All the samples were sensorial evaluated.

Keywords: *wheat germ, halva, almond, walnut*

Introduction

Wheat germ is one of the most nutritional products available. In fact, wheat germ contains 23 nutrients, and has more nutrients per gram than any other vegetable or grain. Wheat germ is a part of the wheat kernel. The germ is only a very small part of the kernel, approximately 2 ½ percent in total. Wheat germ is very high in protein. It contains around 28 percent protein and has more protein than can be found in most meat products (Finely, 1989; Bruce, 1997). The amount of nutrients that are contained within wheat germ seems endless. It contains more potassium and iron than any other food source. Also found in great quantities are riboflavin, calcium, zinc magnesium and vitamins A, B₁ and B₃. Vitamins B₁ and B₃ are very important to maintain energy levels and maintain healthy muscles, organs, hair and skin (Fraser, 1992; Spiller, 1992).

Another important vitamin found in wheat germ is vitamin E. Vitamin E is a very important antioxidant. It is helpful in preventing

the body's aging process and also to prevent heart disease. Vitamin E also helps to prevent blood clots and is needed to strengthen the body's immune system. Wheat germ has been found to be very beneficial in order to keep the body in tip top condition. It is used by athletes in their diet to improve cardiovascular function and improve endurance levels (Sabate, 1993; Spiller, 1997). Body builders will also add wheat germ to their diets in order to bulk up and maintain the nutritional levels they need to perform.

About walnuts it's enough to remind that in March 2004, the U.S. Food and Drug Administration said that foods containing walnuts could be labeled as a heart-healthy food. Specifically, the new FDA-approved health claim reads: "Supportive but not conclusive research shows that eating 1.5 ounces of walnuts per day, as part of a low saturated fat and low-cholesterol diet, and not resulting in increased caloric intake may reduce the risk of coronary heart disease" (Kris-Etherton, 2004). "The important new finding with our research is that a diet high in walnuts beneficially affects multiple risk factors for coronary heart disease, which can have a greater impact on decreasing cardiovascular risk than just targeting single risk factors," author and Penn State nutritionist says in a press release.

Almonds have high levels of unsaturated fatty acids, which make up 93% of their total fat content. The most important if these is oleic acid. Frequent consumption of oleic acid, helps to reduce levels of cholesterol in general. "Bad" or LDL cholesterol is decreasing, while "good" or HDL cholesterol is built up. Being a foodstuff of vegetable origin, almonds do not contain cholesterol (Tapsell, 2004; Tsai, 2004).

Due to their high vitamin E content, almonds provide an extra dose of antioxidants, playing an important part in the prevention of coronary illness and cancer. A 30 g portion of almonds provides 50% of the recommended daily amount of vitamin E. They also contain vitamin B₆ in smaller amounts.

Almonds have the highest fiber content of any tree nut, which is important in facilitating and regulating colon transit, so avoiding constipation and preventing cardiovascular illness. Almonds are an important source of minerals such as calcium, necessary for the formation and maintenance of bones and teeth, magnesium, potassium, copper, phosphorus and zinc.

Experimental

In table 1 could be seen the raw material for each kind of halva new product. Used almond were first blanched and than milled in order to obtain almond flour. For the sample with roasted almonds we roast them after the milling process. Unroasted walnuts were milled first and than unpeeled before milling. A nut grinder helps us to obtain the nuts flour. The white egg was mixed with sugar while heated just until the mixture looks glossy and forms peaks. We use a common hand mixer for whipping the white eggs and mixing the ingredients. The wheat germs were added into the milled flour of nuts. Also was the cocoa. All the mixture was than added into the whipped white egg with sugar.

Table 1. Raw materials for each kind of halva product

SAMPLE	ALMOND TYPE				WALNUT TYPE			
	1	2	3	4	5	6	7	8
unroasted almond flour	x	x	-	-	-	-	-	-
roasted almond flour	-	-	x	x	-	-	-	-
unroasted walnut flour	-	-	-	-	x	x	-	-
roasted walnut flour	-	-	-	-	-	-	x	x
Wheat germs	x	x	x	x	x	x	x	x
Sugar	x	x	x	x	x	x	x	x
White egg	x	x	x	x	x	x	x	x
Cocoa	-	x	-	x	-	x	-	x

x – Indicates the presence

- - Indicates the absence

During cooling process the composition becomes harder with moulding and slicing properties. Our products have no oily appearance or crumbling behavior.

Results and Discussions

The evaluators found that all the samples are very pleasant. Samples made with unroasted walnuts had some slight bitter aftertaste because of the unpeeled nuts. On the same samples an astringent sensation appeared. Despite the proportion in which the wheat germs were added was significant we found no perceptible difference compare to the control sample.

As general observation those sample made with roasted nuts were evaluated as more appetizing that those made with unroasted nuts.

Even samples with cocoa added were more appetizing when were made with roasted nuts. Walnuts samples were evaluated as more specific flavored especially where the cocoa was no present.

Conclusions

We found a very pleasant way to incorporate very high nutritional value raw materials in daily diet. 100 daily grams of our halva product will contribute on health promoting no matter what sample will be your favorite.

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