

# Test to Elaboration a dry cookies based bran of durum

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## Abstract

This work aims to enhance the bran of durum wheat seen its incorporation into a cookies, and the presentation of the main contents observed in each the bran of durum either in cookies enriched with different percentage of bran incorporation.

The results obtained physical and chemicals have shown that our base sample "bran" is an energy power value about 216.2 Kcal / 100g. This value is due to the presence of nutrients (carbohydrate, protein ....).Microbiological analyses reveal that our durum bran and the cookies are satisfactory with High quality

**Key words:** durum wheat, hard wheat bran dietary fiber, nutritional interests, dry cookies enriched, percentage of incorporation.

## 1. Introduction

The aim of our study is to make a biscuit enriched with several incorporations and it's hard to follow the physical and chemical and microbiological quality of the raw material its durum wheat, and our finished product" cookie bran ".

Wheat bran is a rich dietary supplements potential dietary fiber for human diet, is known for its nutritional interest. It is indeed an excellent source of minerals, especially phosphorus, magnesium or iron, it also has other interests, it greatly helps digestion it ensures– regular bowel movements. It delays the absorption of sugars and fats less easily store, including cholesterol, imprisoning in its fibers.

## 2. Materials and Method

### 2.1. *Vegetal materiel*

Our study focused on a source of energy cereal, durum wheat and one of its sub-products "bran» and these in two phases:

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1. Durum wheat: raw material procured from an agricultural area "El Menea" located in the southern province of Ghardaia in Algeria

2. The bran of durum wheat: obtained by a process of technological transformation at different stages (wheat cleaning, packaging and end milling). For each physico-chemical and

microbiological analysis, we take the result of the arithmetic average of the analysis of two test sockets.

## 2.2. Preparation test of cookie

### 2.2.1. Purpose and principle

The trial preparation of dry cookies it consists in incorporating it in a cookies. The incorporation rate was performed as follows: 35% and 0-5-10-15-20-25-30.

Our work aims to study the rheological characteristics of the dough, so that the organoleptic characteristics of cookies prepared.

The ingredients of our cookies and pasta adequate amounts are shown in Table (1) below:

**Table 1.** Quantities and role of ingredients used in the prepare of dry cookies: (Nuret, 1991)[1]

Ingredients	Quantities (g)	Role (KIGER et al., 1968)
Flour	500	Source of gluten, starch, and lipid .....
Sugar	150	Gives flavor, color and the substrate is yeast.
Alimentary vegetable fat	80 à 84	Increase plasticity of the dough and ensures a fast cooking
Lactosérum	13	Improves the flavor and color and has a buffering effect on the pH.
Sodium bicarbonate	4,2	Ensures the production of carbon dioxide
Ammonium bicarbonate	5	Ensures the production of carbon dioxide.
Salt	1,5	Improves the flavor and allows the absorption of water and the hardening of the gluten.
Lecithin	3 à 5	Emulsification and improved flavor agent
Vanilla flavor	3	Adds flavor to the cookie
water	100 à 120	Hydrating agent and plasticity of the paste and enables the dissolution of the salt and the ingredient

### **2.3. Physical and chemicals analysis**

The subject of this analysis is the following parameters (humidity, ash content, protein, cellulose, shortening, starch, acidity) according to the Algerians standard.

### **2.4. Microbiological analysis**

The analysis are based on the detection and enumeration of the most significant of the hygienic condition of the product after the JORA DP N ° 35 of 27/05/1998 [4]. which indicates germs sought for grain and grain by-product (durum wheat germs and wheat bran); these analysis are as follows: *staphylococcus aureus* , *mold*, *sulphite reducing clostridia* , *coliforms* ,*total aerobic germe* ,*salmonelle*.

### **2.5. Organoleptic analysis (sensory) Cookie's**

#### **2.5.1. Principe**

Simultaneous presentation of samples dry cookie enriched of bran more review of certain cookie' organoleptic characteristics selected using a classification system category of intensity or quality (I.S.O. 1977 Standard).

## **3. Results**

### **3.1. Results of Physicochemical analysis**

The results of physicochemical analysis are presented in Table 2.



### 3.2. Results of Microbiological analysis

The results of microbiological analysis are represented in table 3.

**Table 3.** results of microbiological analyses of bran and bran cookies

	Bran of the durum wheat	Bran cookies	Algerian standard UFC/ml
Sulphite reducing clostidia	Abs	-	$\leq 10^2$
Mold	10	20	$\leq 10^2$
Total aerobic germe	-	196	$\leq 10^3$
<i>E. coli</i>	-	Abs	$\leq 5$
<i>Staphylococcus</i>	-	Abs	$\leq 10^2$
<i>Salmonella</i>	-	Abs	-

### 3.3. Evaluation of dry cookies sensory secs enriched by bran of durum wheat

According to the results of sensory analysis on the cookies fortified its hard wheat at different incorporations, we note that the cookies made from 5 to 15% of durum wheat have a better surface condition compared to others.

#### 3.3.1. The taste

The results are represented in table 4.

**Table 4.** The rate of time preference of cookies to taste a percentage (%).

Testimonials incorporation rate %	Inacceptable	mediocre	Average	good	Excellent
0	0	37,5	18,75	37,5	6,25
5	0	6,25	43,75	50	0
10	0	43,75	43,75	18,75	6,25
15	0	37,5	50	6,25	6,25
20	0	25	50	18,75	6,25
25	0	43,75	43,75	6,25	6,25
30	6,25	50	25	12,5	6,25
35	12,5	43,75	37,5	6,25	0

The incorporation of the durum wheat at a rate ranging from 20% improves the hardness; this improvement is due to the friability cookies resulting from the high production of carbon dioxide during fermentation.

### 3.3.2. The flavor

The results are represented in table 5.

**Table 5.** Rates of dry cookies on flavor, expressed on percentage (%).

Testimonials Rate incorporation%	Inacceptable	Mediocre	Average	Good	Excellent
0	0	12,5	43,75	43,75	0
5	0	37,5	56,25	0	6,25
10	0	31,25	62,5	6,25	0
15	6,25	43,75	18,75	31,25	0
20	0	50	37,5	12,5	0
25	18,75	31,25	43,75	6,25	0
30	18,75	43,75	12,5	25	0
35	43,75	18,75	18,75	18,75	0

According to the jury tasting the flavor of cookies is an improved incorporation rate of 15 %.

## 4. Discussion

In our case we can observe that our samples of wheat bran biscuit hard and have a relatively high energy intake.

Generally; considering that the coefficient for digestive CUD energy decreases by 2 to 3% or more when the gross cellulose assayed by the method of WEENDE increases by 1 %. There are also variations more or less important depending on the nature of the constituent grain ration ( Nehring , 1966)[2].

It is noted that the proteins are present in the sound, as in the biscuit different incorporations. For carbohydrates and primarily the starch; rates obtained are important in the different samples (bran and cookie's bran).

It is to remember that all results are normative, with the exception of moisture cookies that are higher than required standards to the company because of the material used as it has been cited

previously.

Wheat bran consists essentially of envelopes and the cap grain it further contains fragments of starch, a protein portion of the seat and a low proportion of the germ. Its crude fiber content is relatively high (7.5 % of DM); its walls are not lignified and easily but slowly degradable; its fat content varies according to the proportions of germs.

According to (Jarrige, 1988) [3]. By-products of cereals, mainly those from the milling, starch, semolina and the fermentation industries (brewery, production of alcohol ..... etc). Analytical characteristics and nutritional value are very different according to the botanical origin and especially the technological treatment.

Microbiological analysis shows a total lack of pathogens.

## Conclusions

Our work has been to show that in terms of energy, the analysis conducted on our products lead to the following conclusion:

Microbiological analysis shows a total lack of pathogens.

The physical and chemical analysis shows that:

Our bran durum wheat is rich in protein, starch and crude fiber and this gives the bran of hard wheat its ability to become a good source of energy and fiber.

Our dry biscuit different incorporations is a product of good nutritional quality for its incorporation of high levels of protein and crude fiber It has been found according to the organoleptic analysis of cookies and the opinion of the jury tasting the best incorporation rate is 15% which has acceptable characteristics.

it would be interesting to encourage the manufacture of these cookies for the cost of its durum one hand; and the consumption of the latter because of his wealth to enhance our relationship dietary fiber and digestive disorders to adjust the other.

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