

APPRECIATION OF GERMINATED GRAINS QUALITY INDICATORS USED TO DELIVER FOOD PROTECTION

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Abstract

The study did have obtained a series of extracts from germinated grain for use them to obtain food safety. Were used these grains for sprouting: barley, wheat, corn. In the first phase were obtained germinated grain and in the second extracts. After obtaining method Kongress extracts were made determinations to calculate the extraction efficiency, reducing sugar and content of amino acids. Determination of amino acids was made by Sorensen method. Determination of extract yield in musts obtained by correlating the relative density is achieved with extract of malt wort.

Taking into account the results of the analysis, the conclusion is: germinated wheat grains have higher values as the other cereals studied indicated the production of food with therapeutic properties. Germ of cereals are very rich in vitamin E, vitamins, essential amino acids, B vitamins and antioxidants.

In terms of amino acid content of musts obtained from germinated wheat is the richest in amino acids, but the highest value of the grape extract was made from barley.

Keywords: food protection, germinated grains, extract

1. INTRODUCTION

The term functional foods was first introduced in Japan in the mid-1980s and refers to processed foods containing ingredients that aid specific bodily functions in addition to being nutritious. Protective foods contain a number of nutritional assets, which by nature characterized the new spirit of prophylactic medicine, to prevent disease, not just treat it.[1] The high content of vitamins, some protective foods (wheat and corn germ, germinated grains, yeast, products from sea buckthorn and rosehip) may represent an important source of these nutrients, and knowing that natural vitamins are more effective than the synthesis. Richness in biologically active substances cause a beneficial protective effect at the cellular level. They increase the body's natural immunity and invigorating effects.[2]

Germ proteins are well balanced in essential amino acids, is far superior endosperm proteins. They can be used to compensate for their deficit in lysine and methionine. Germ of cereals (malting) are very rich in vitamin E, which has beneficial effects in many illnesses, being considered "a vitamin in search

of diseases". The fact that vitamin E is accompanied by a series of antioxidants and vitamin B complex increases its nutritional and therapeutic efficiency.

Based on extracts of germinated grain can obtain various preparations recommended especially children, elderly and people affected by diabetes, anemia, avitaminoza, arteriosclerosis, various disorders of the large intestine.[3]

Malt extract is used to treat common constipation, diarrhea, irritable bowel syndrome, spastic colon, diverticulitis, and hemorrhoids. [4]

Generally derivatives based on germinated grain can form a wide range of protection products used in toning the body, in infant and sick, as fortified with different vectors bioioni and vitamins in the therapy of various diseases.[5]

Extracts from germinated barley, wheat and corn showed compatibility when blended with milk in proportions of 30%, 40%, and 50%, respectively. The pH of grain extract-milk blends initially adjusted to 7.2 decreased to pH

6.2-6.4 when processed in bottles at 121°C for 15 min. The wheat and barley extract beverages scored highest preference followed by corn beverages. The beverage has excellent malty taste and smooth mouth feel.[6]

2. MATERIALS AND METHODS

In this work we obtained extracts of malted wheat, barley and maize, according to the following steps:

-Obtaining malt;

-Obtaining the extract;

Malting is a process applied to cereal grains, in which the grains are made to germinate by soaking in water and are then quickly halted from germinating further by drying/heating with hot air.

They worked with each 500g of each type of grain. In order to obtain quality products has made a preconditioning cereals which included: cleaning, dust, foreign bodies and sorting by size. Soaking was done with drinking water. If barley had a duration of 48 hours, 24 hours in case of wheat and maize 36 hours.

Grains were germinated for 6 days at a temperature of 18-20 ° C, then were dried in the oven until the moisture has fallen below 6%. Radicles were removed and grinding was performed with an electric device. Malt extracts of the three types of grain were obtained by the method Kongress, which is the laboratory method used for preparation and chemical characterization of extract of malt barley in the beer industry.

The three types of extracts were subjected to the following analysis:

- Determination of amino acids;
 - Determining the extraction efficiency.
- Determination of amino acids was made by Sorensen method. The method is based on another amino acid to react with formaldehyde to the amine groups with formation of methylene derivatives. Becomes an amphoteric amino compound methylene with free carboxylic function, which can be titrated with sodium hydroxide in the presence of phenolphthalein. The amount of amino acids in the test sample is expressed in percentage of

nitrogen or glicocol. Determination of extract yield in musts obtained by correlating the relative density is achieved with extract of malt wort, the tables of STAS. Relative density is determined by the method pycnometer at a temperature of 20 deg.C. Reducing sugar was determined by the method of Schoolr as maltose and dry substance by refractometry.

3. RESULTS AND DISCUSSION

Malt extracts obtained were studied in terms of content and the amino acid extract. The results obtained in determining the extraction efficiency are mentioned in Figure 1.

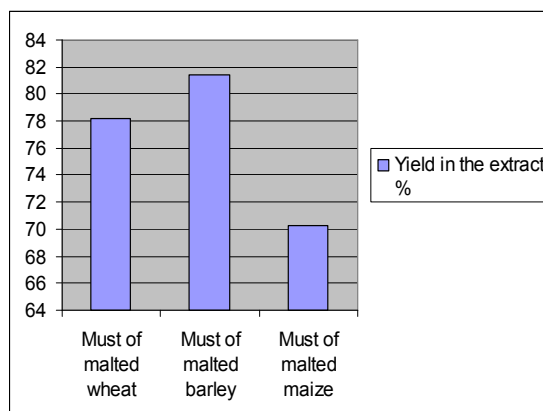


Fig. 1 Return to the grape extract of germinated grain

Must obtained from malted barley presents the greatest concentration of extract 81.46%, compared to wheat and maize which is 78.23% with 70.23%. Most of extract these musts are the sugars, vitamins, enzymes able active amino acids. The sugar, heavy in maltose, derived from such grains, such as the baker's malt used in various cereals. The enzymes formed during germination act on starch. Of metabolism occurs in direct fermentaescibil dextrins and sugar. Extract of malt is a sweet, treacly substance given to children as a dietary supplement.

After calculating amino acid content were obtained the results plotted in Figure 2.

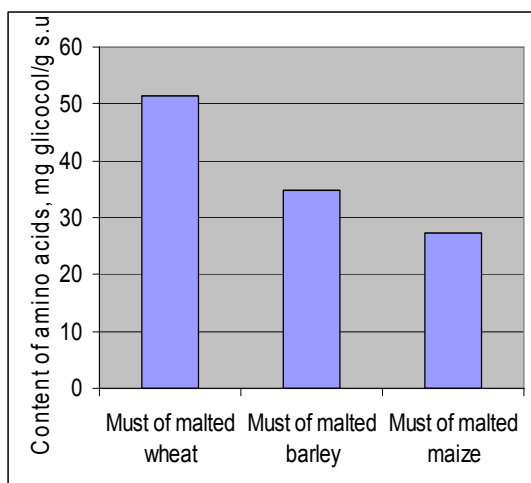


Fig. 2 Amino acid content in the samples analyzed

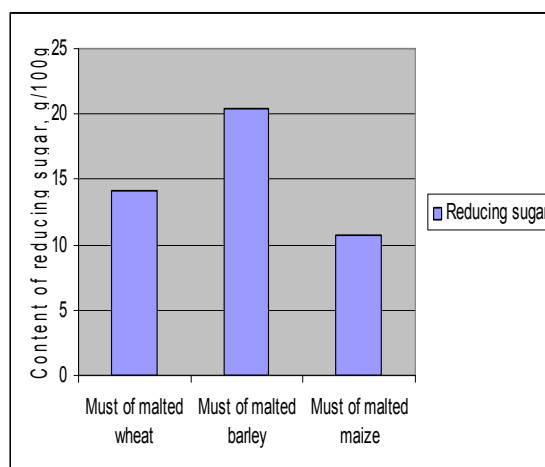


Fig. 3 Reducing sugar content in the samples analyzed

Comparison of amino acid content in grape solids samples were found to share the most significant is found in the sample obtained from germinated wheat 51.45 mg glycol / g and in the corn germinated 27.38 mg glycol / g. Because this amino acid in these products and especially of the essential, the flos as such or concentrated, to obtain preparations used in nutrition of children, elderly and those with various diseases.

After determination of reducing sugar content in the form of maltose, we achieved the results outlined in Figure 3.

It found that the highest content of maltose exist in must of malted barley (20,4g/100g). Must of malted maize has the lowest content of maltose (10,7g/100g).

Hydrolysis of starch content in the must obtained from grains germinated barley is advanced when compared with wheat and maize.

For this reason to perform focus and concentrate mash of malted barley is used as a source of maltose to sweeten various products, for feeding children and elderly.

4. CONCLUSION

Germinated wheat grains have higher values of other studies being the most adequate to obtain food with therapeutic properties.

Malt extracts contain a wide range of amino acids due to conversion during extraction and so is readily absorbed into the body's bloodstream.

Germinated barley mash to form a higher yield of other grains germinated.

Must of malted wheat had the highest content of amino acids.

Content of reducing sugar is higher in the barley malt extract, compared to other grains germinated studied.

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