



Preparing Traditional Supplementary Foods from Roasted and Malted Bajra

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Abstract Supplementary foods made from roasted and malted bajra (pearl millet) are nutritionally valuable additions to diets, especially in regions where millets are staple crops. Roasting bajra enhances its flavour and nutritional profile, while malted bajra involves the germination process, increasing its nutrient content by activated alpha amylase. Roasting and malting increase the bioavailability of nutrients in bajra, making it a good source of essential vitamins and minerals, including iron, calcium, and B-vitamins. And Improves Digestibility: Malting breaks down complex carbohydrates, making the bajra more digestible and reducing anti-nutrients, which can hinder nutrient absorption. Bajra-based supplementary foods provide a significant source of energy due to their carbohydrate content, making them ideal for individuals with high energy requirements. In regions where bajra is a staple crop, utilizing roasted and malted bajra in supplementary foods can contribute to improved nutrition and food security.

Keywords Supplementary Foods, Malted Bajra, vitamins and minerals, including iron, calcium

Introduction

In the quest for a balanced and nutritious diet, it's essential to explore alternatives to conventional staples like rice and wheat. One such underrated grain that deserves our attention is bajra, also known as pearl millet. Bajra, when roasted and malted, can be transformed into a range of supplementary foods that offer exceptional health benefits. This article delves into the world of supplementary foods prepared from roasted and malted bajra and highlights their nutritional advantages.

The Science Behind the Increase in Alpha-Amylase Activity during Bajra Malting.

Bajra, scientifically known as *Pennisetum glaucum*, is a widely cultivated cereal grain in various parts of the world, especially in arid and semi-arid regions. It has been a staple food source for millions of people due to its hardiness and adaptability to adverse environmental conditions. One of the key processes that enhances the nutritional value and utility of bajra is malting. Malting not only improves its taste and digestibility but also increases the activity of alpha-amylase, an enzyme crucial for the breakdown of starches into simpler sugars. In this article, we will explore the fascinating science behind the increase in alpha-amylase activity during the malting of bajra.

The Malting Process

Malting is a controlled germination process that involves soaking and drying cereal grains like bajra. The primary goal of malting is to initiate the growth of the embryo within the grain, which triggers the activation of various enzymes. Among these enzymes, alpha-amylase plays a central role in the breakdown of starches into sugars.



1. **Starch Storage:** Grains, including bajra, store energy in the form of starches. Starch consists of long chains of glucose molecules. These chains are too large to be absorbed and utilized by humans directly.
2. **Activation of Alpha-Amylase:** During the malting process, the grains are soaked in water, initiating the germination process. This activates alpha-amylase, an enzyme produced by the growing embryo within the grain.
3. **Starch Hydrolysis:** Alpha-amylase begins to break down the starch molecules into smaller fragments, known as dextrins. These dextrins are shorter chains of glucose molecules and are easier for our bodies to digest and absorb.
4. **Drying:** After the desired level of enzymatic activity is achieved, the malted grains are dried to halt the germination process. This also preserves the increased alpha-amylase activity.

The Role of Temperature and Time

The increase in alpha-amylase activity during bajra malting is influenced by several factors, including temperature and time. The enzymes involved in the process are temperature-sensitive, with an optimal range for their activity. Typically, malting is carried out at temperatures between 15°C and 20°C. Temperatures below this range can slow down enzyme activation, while temperatures above can denature the enzymes.

The duration of malting is also critical. Too short a malting period may not allow for sufficient enzymatic activity, while too long a period can lead to over-malted grains with reduced overall quality.

Nutritional Benefits of Malting

The increase in alpha-amylase activity during bajra malting has significant nutritional benefits:

1. **Enhanced Digestibility:** The higher alpha-amylase activity results in a greater conversion of starches to simpler sugars, making the grain easier to digest.
2. **Increased Nutrient Availability:** The breakdown of starches releases essential nutrients, such as glucose and maltose, which are readily absorbed by the body.
3. **Improved Taste and Aroma:** Malting imparts a unique taste and aroma to bajra, making it more appealing to consumers.

The malting process is a fascinating journey of transformation for bajra grains. Through controlled germination and enzymatic activity, alpha-amylase plays a pivotal role in breaking down starches into sugars, ultimately increasing the nutritional value and palatability of bajra. This process not only benefits human nutrition but also contributes to the diversity and adaptability of our global food supply. Bajra malting serves as a testament to the ingenuity of agricultural practices that have evolved over centuries to enhance the utility of staple crops.

The Roasting

1. **Enhanced Nutritional Value:** Roasting bajra can increase its nutritional value by preserving essential nutrients like fiber, vitamins, and minerals.
2. **Improved Digestibility:** Roasting can make bajra easier to digest by breaking down complex carbohydrates.
3. **Enhanced Flavour:** Roasting adds a pleasant, nutty flavour to bajra, making it more enjoyable to eat.
4. **Longer Shelf Life:** Roasted bajra can have a longer shelf life compared to raw bajra, reducing the risk of spoilage.
5. **Convenient Snack:** Roasted bajra makes for a convenient, ready-to-eat snack that is portable and can be enjoyed on the go.
6. **Potential Weight Management:** Bajra is naturally low in fat, and roasting it without added oils keeps it a low-calorie option for those watching their weight.
7. **Gluten-Free Option:** Bajra is naturally gluten-free, making it suitable for individuals with gluten sensitivities or celiac disease.
8. **Satiety:** Roasted bajra can help you feel full and satisfied due to its fiber content, potentially aiding in appetite control.
9. **Energy Boost:** Bajra is a good source of complex carbohydrates, providing sustained energy throughout the day.



10. Versatility: Roasted bajra can be used in various recipes, from snacks to side dishes and even in flour form for making rotis or flatbreads.

Remember that roasting should be done carefully to avoid burning and to retain the nutritional benefits.

Roasting and Malting Bajra: A Traditional Technique

Roasting and malting are age-old techniques used to enhance the nutritional value of grains like bajra. Roasting bajra not only imparts a delightful nutty flavour but also makes it easier to digest. Malting, on the other hand, involves soaking the grain in water and allowing it to germinate before drying and roasting. This process increases the availability of nutrients and improves the grain's digestibility.

Supplementary Foods from Roasted and Malted Bajra

1. ***Bajra Porridge***: Bajra porridge is a warm and comforting dish that can be consumed for breakfast or as a snack. It's simple to prepare and offers a healthy dose of fiber, vitamins, and minerals. Bajra's high fiber content aids in digestion and helps regulate blood sugar levels.

2. ***Bajra Ladoos***: Bajra ladoos are nutritious and energy-packed treats. They are often made with roasted and malted bajra, mixed with ghee, jaggery, and various nuts and seeds. These ladoos are a powerhouse of nutrients, making them an excellent snack for kids and adults alike.

3. ***Bajra Roti***: Bajra roti, or flatbread, is a staple in many Indian households. When bajra is roasted and malted before being ground into flour, it results in a more nutritious alternative to traditional wheat flour. Bajra rotis are gluten-free and rich in iron, making them ideal for those with dietary restrictions and iron deficiencies.

4. ***Bajra Kheer***: Bajra kheer is a dessert prepared from roasted and malted bajra, milk, and sweeteners. It's a delightful way to enjoy the health benefits of bajra while satisfying your sweet tooth. This dessert is an excellent source of calcium and protein.

Nutritional Benefits of Roasting

The transformation of bajra through roasting and malting enhances its nutritional profile significantly. Some key benefits include:

- ***High Fiber Content***: Roasted and malted bajra is rich in dietary Fiber, promoting digestive health and aiding in weight management.

- ***Vitamins and Minerals***: Bajra is a good source of essential vitamins and minerals, including B-complex vitamins, iron, magnesium, and phosphorus.

- ***Gluten-Free***: Bajra is naturally gluten-free, making it suitable for individuals with celiac disease or gluten sensitivities.

- ***Sustained Energy***: The complex carbohydrates in bajra provide a steady release of energy, making it an ideal choice for athletes and those with active lifestyles.

- ***Blood Sugar Control***: Bajra has a low glycaemic index, which helps regulate blood sugar levels, making it suitable for people with diabetes.

Conclusion

Roasted and malted bajra opens up a world of culinary possibilities, offering supplementary foods that are not only delicious but also packed with nutrition. These traditional preparations are an excellent way to incorporate the goodness of bajra into your diet, providing numerous health benefits and catering to various dietary needs. So, next time you're looking for a wholesome addition to your meals or snacks, consider exploring the world of supplementary foods prepared from roasted and malted bajra. Your taste buds and your health will thank you!



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