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DEVELOPMENT OF PROTEIN DENSE SNACK FOR ENDURANCE ATHLETES

Development of bajra millet snacks as protein source for endurance sports personnel

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Abstract: Athletes need more protein as they are building and/or repairing muscle as well as connective tissue. Their requirements are two to three times the amount of protein as normal people, or between 1.4-2g per kilo of body weight per day. This is a large range, allowing variation for the sort of sport they play. Protein deficiency is one of the common problems seen in young athletes. We developed bajra millet cracker for an endurance athlete which is protein dense snack it will fasten the recovery rate and prevents muscle wastage. Protein dense cracker can be consumed post training or exercise for greater recovery as well as before exercise to prevent muscle breakdown. We reviewed 20 research articles on this topic after the product development sensory evaluation carried out by team evaluators based on taste, texture, appearance, odor, and color. Microbiological testing was done in our college laboratory. Shelf-life analysis was done by keeping product in Air tight container for twenty days.

Keywords: protein, muscle build, endurance athletes, recovery, bajra millet, cracker

I. INTRODUCTION

Protein deficiency is seen more in young endurance athletes. protein is important for building muscle and to prevent muscle wastage.

Pearl millet, also known as *Pennisetum glaucum*, is a type of cereal grain that is widely grown in the arid regions of Africa and Asia. It is a highly nutritious and drought-resistant crop that is often used as a staple food in these regions. Pearl millet has a high protein content and is a good source of minerals such as iron, zinc, and magnesium. It is also rich in dietary fiber and has a low glycemic index, making it a good choice for people with diabetes. In addition to being consumed as a grain, pearl millet is also used to feed livestock and can be made into flour, porridge, and other food products. Despite its many health benefits, pearl millet is not as well-known or widely consumed in other parts of the world as other cereal grains such as rice or wheat.

Pearl millet is a highly nutritious grain that provides several health benefits when consumed regularly. Some of the potential health benefits of pearl millet include:

High protein content: Pearl millet is a good source of protein, which is essential for the growth, repair, and maintenance of body tissues.

Rich in minerals: Pearl millet is a good source of minerals such as iron, zinc, and magnesium, which are important for maintaining good health.

High dietary fiber: Pearl millet is rich in dietary fiber, which is important for maintaining digestive health and preventing constipation.

Low glycemic index: Pearl millet has a low glycemic index, which means that it is absorbed slowly by the body and does not cause rapid spikes in blood sugar levels. This makes it a good choice for people with diabetes or at risk of developing diabetes.

May help lower cholesterol levels: Some studies have shown that pearl millet may help lower cholesterol levels and reduce the risk of heart disease.

May improve bone health: The high levels of minerals such as magnesium and phosphorus in pearl millet may help improve bone health and reduce the risk of osteoporosis.

May have anti-inflammatory effects: Some research suggests that pearl millet may have anti-inflammatory effects, which may be beneficial for people with certain inflammatory conditions such as rheumatoid arthritis.

Objectives:

- To formulate a protein dense and healthy snack
- To standardize bajra cracker recipe to study shelf life of a product
- To carry out sensory evaluation
- To do microbial testing

Null hypothesis: bajra crackers is not a protein dense snack for endurance athletes.

Methodology:

To prepare protein dense bajra cracker for endurance athletes bajra flour(30gm), gram flour(15gm), soybean flour(30gm) was taken and was mixed pinch of garam masala, salt, and oil(10gm) After mixing flour water was added to form a dough. Small portions were taken from dough and rolled with the help of rolling pin rolled chapati was cut down into different shapes by using shape cutters. Crackers were air fried in wonder chef air fryer then seasoned by peri peri masala.

RESULTS AND DISCUSSION

Nutritive values

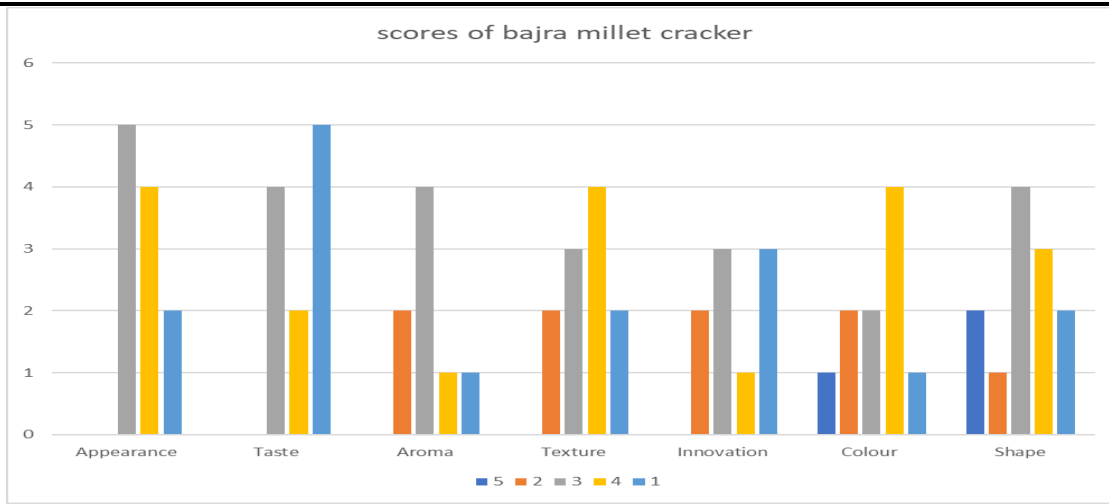
	Amount (grams)	Energy (kcal)	Carbohydrates (grams)	Protein (Grams)	Fats (grams)	Fiber (grams)
Bajra millet (pearl)	30	104	18.53	3.29	1.63	3.45
Soy chunks(powdered)	30	100	10	15	-	0.3
Gram flour	15	58	8.67	3.36	1	1.62
Oil	15	135	-	-	15	-
Total	75	397	37.2	21.65	17.63	5.37

SENSORY EVALUATION

The results of sensory evaluation for bajra millet crackers are shown in the table below. These scores were given using a Likert scale, with 1 being the lowest and 5 the highest. The crackers were evaluated on various attributes, including taste, texture, and overall acceptability. The results indicate that the Bajra Crackers was generally well-liked, with high scores given for taste and overall acceptability. There were some variations in the scores for color and shape. Overall, the Bajra Millet crackers was a success and received positive feedback form the sensory naïve panel.

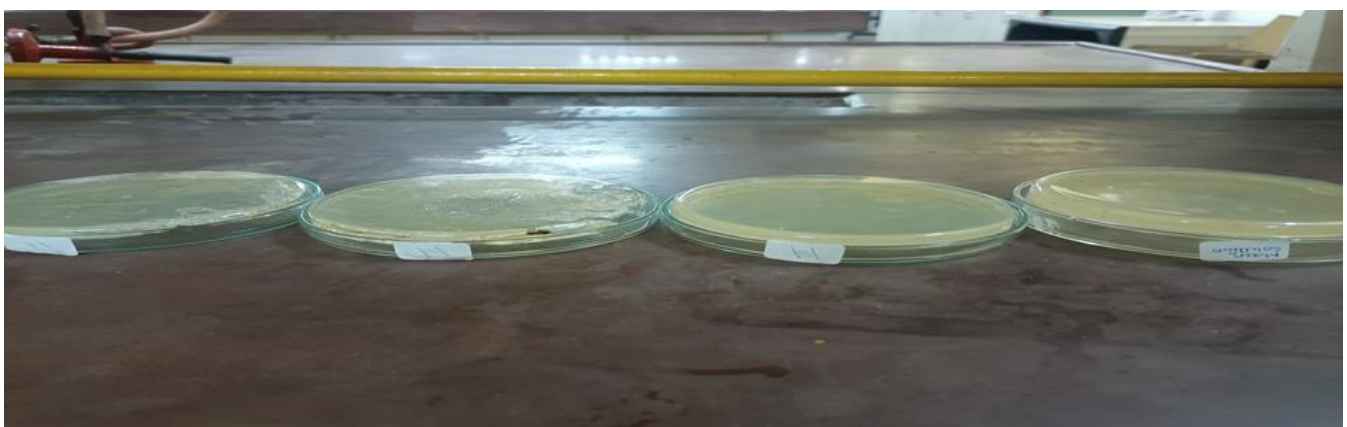
Table .1 scores of bajra millet cracker

People's opinion	1	2	3	4	5
Appearance			5	4	2
Taste			4	2	4
Aroma		2	5	1	2
Texture		2	3	4	2
Innovation		2	3	1	3
Color	1	2	2	4	1
Shape	2	1	4	3	2



Microbial testing

To determine the number of colonies produced by the product, a broth was created and a plate counting agar was prepared. 23.5 grams of agar was suspended in 1000 mL of distilled water and heated until fully dissolved. The powdered cracker was then sterilized in an autoclave at 121 degrees Fahrenheit for 15 minutes, cooled to 45-50 degrees, and placed in a petri dish. The sample was then added to the dish using the Pour Plate Method and incubated for 48 hours. Upon examination under a microscope, no growth of colonies was observed.



Shelf-life analysis

Crackers were kept in air tight container to evaluate its shelf life for 20 days. We didn't found any changes in its color, texture, appearance, odor, and taste. It can be concluded that product will remain good as such for more than 20 days.

Conclusion

Protein deficiency is one of the common problems which was seen in an athlete so we developed bajra millet crackers for an endurance athlete it is a protein dense snack to help in fasten the recovery and prevents muscle wastage. The process of new product development was very successful. It can be now test on endurance athletes.

ACKNOWLEDGMENT

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REFERENCES

- [1] peter W.R. lemon and David N. proctor (2012), sports medicine, springer
[2] Cecilia Snyder, MS, RD on October 2, 2020 — Medically reviewed by Jillian Kubala, MS, RD, Nutrition

