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DEVELOPMENT OF MILLET ENRICHED MOMOS

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Abstract

Momos, a delicacy that originated in the Himalayas, have succeeded in crossing cultural barriers and becoming a favourite all over the world. Traditional momos, on the other hand, are made predominantly with refined wheat flour, which is deficient in terms of nutritional richness. The purpose of this article is to investigate the possibility of developing millet-enriched momos by including millet flour into the dough in order to improve in terms of both nutrition and sustainability. In this research, the practicality and consumer acceptability of millet-enriched momos are evaluated via rigorous experimental and sensory analysis. Additionally, insights into the nutritional advantages and ecological implications of these momos are provided.

Keywords: *Momos, Millets, Nutrition, Sustainability, Culinary Innovation, Sensory Analysis, Nutritional Analysis*

I.Introduction

The Himalayan areas of Nepal and Tibet are the birthplace of momos, which have since become a famous street snack and a staple in restaurants all over the globe. In spite of the fact that they are quite popular, traditional momos are often made from refined wheat flour, which does not provide the level of nutritional density that is needed in modern diets. Millet flour is a nutrient-dense grain that does not contain gluten, and there is a rising interest in using it into momo recipes as a reaction to increasing concerns about health and sustainability. The purpose of this research is to investigate the production of millet-enriched momos with the intention of improving their nutritional profile while simultaneously taking into consideration sustainable cooking techniques.

The invention of momo that is enhanced with millet is a new method that aims to encourage healthy eating habits and solve the problem of malnutrition in particular communities. Mama is a classic dumpling meal that is popular in Nepal, Tibet, and Bhutan. The dough for momo is normally produced with refined wheat, and the dumplings are often filled with either meat or vegetables. This traditional recipe, on the other hand, may be altered to use millet flour, which is a grain that is abundant in nutrients. Unlike other grains, millet does not contain gluten and is an excellent source of nutritional fibre, protein, vitamins, and minerals. Additionally, it is an excellent source of antioxidants, which have been shown to bestow a variety of health

advantages, one of which is a reduction in the likelihood of developing chronic illnesses such as diabetes and cardiovascular disease. A considerable improvement in the nutritional profile of the meal may be achieved by the use of millet flour in the preparation of momo dough. There are many stages involved in the production of momo that is supplemented with millet.

Millet flour is used in place of some of the refined flour in the original momo recipe. This is the first step in the modification process. While this may be done gradually, it is important to remember that the flavour and consistency of the momo will not be altered in any way. In order to make the dough, the millet flour, refined flour, and several other components, including water and oil, are combined, and mixed together. One additional thing that can be done to make the momo healthier is to alter the filling that is inside it. In the past, the filling was often prepared with either meat or vegetables. Adding more veggies, legumes, or protein-rich items like lentils or tofu to the filling is one way to further improve its nutritional content. Other options include adding additional vegetables. The amount of protein in the meal would rise as a result of this, and it would also get an increase in the amount of fibre, vitamins, and minerals. Once the modified dough and filling have been created, the momo may be moulded and either steamed or fried in accordance with the conventional procedure respectively. The finished product will be a healthier version of momo, with additional nutritional advantages derived from the millet flour and the enhanced filling.

A wide range of nutritional benefits may be derived from millet grains, which include kinds such as finger millet, pearl millet, and foxtail millet. Protein, dietary fibre, vitamins (especially B vitamins), and minerals are high in these ancient grains, which are also rich in minerals (such as iron, magnesium, and phosphorus). In addition, millets have a low glycemic index, which makes them an excellent option for those who are trying to manage their diabetes or who are looking for a kind of prolonged energy release. Furthermore, in comparison to typical cereal crops, millets need a much lower amount of water and inputs, which makes them ecologically sustainable and adaptable in the face of challenging growing circumstances.

Millet grains, which include varieties such as finger millet (Eleusine coracana), pearl millet (Pennisetum glaucum), and foxtail millet (Setaria italica), have been lauded for a long time due to the exceptional nutritional content they possess and the wide range of culinary applications they can be utilised for. These ancient grains have a wide range of nutritional benefits, which makes them an important component of contemporary diets.

1. Protein Content

One of the most prominent characteristics of millet grains is their comparatively high protein content in comparison to that of other cereal crops. It is vital to consume protein in order to repair and develop muscles, maintain immunological function, and maintain general health. The use of millets may help those who are following vegetarian or plant-based diets to achieve their daily protein needs. This is especially true for individuals who consume millets every day.

2. Dietary Fiber

The high amount of dietary fibre that millets have is one of the characteristics that sets them apart from other grains. In addition to assisting in the control of weight by increasing sensations of fullness, dietary fibre plays an important role in the maintenance of digestive health by facilitating regular bowel movements, lowering the risk of constipation, and managing weight. The consumption of millets, which are rich in both soluble and insoluble fibre, is beneficial to the health of the gastrointestinal tract as a whole.

3. Vitamins

Millets have a high concentration of a variety of vitamins, with a special focus on B vitamins including niacin (vitamin B3), thiamine (vitamin B1), riboflavin (vitamin B2), and folate (vitamin B9). The metabolism of energy, the operation of the neurological system, the generation of red blood cells, and the growth of the foetus are all significant functions that these vitamins perform throughout pregnancy. In addition to supporting general health and well-being, the consumption of millets may assist in meeting daily vitamin needs.

4. Minerals

Millets are rich in a variety of critical minerals, including zinc, iron, magnesium, and phosphorus, in addition to the vitamins that they contain. Magnesium is essential for maintaining bone health, muscular function, and nerve transmission, whereas iron is essential for oxygen delivery in the blood and avoiding anaemia. There is a correlation between phosphorus and the creation of bones and teeth, while zinc plays a role in immunological function and the healing of wounds. Millets, when consumed on a regular basis, may assist in the maintenance of healthy mineral levels inside the body.

5. Low Glycemic Index

Millets have a low glycemic index (GI), which indicates that they are digested and absorbed slowly. As a consequence, they cause moderate and consistent rises in blood sugar levels. People who are controlling their diabetes or who are looking for continuous energy release throughout the day might benefit from eating foods that have a low glycemic index (GI). This may help manage blood sugar levels and lower the risk of insulin spikes and crashes. Millets can be included in meals to help regulate blood sugar levels.

6. Environmental Sustainability

In addition to their positive effects on nutrition, millets also have major positive effects on the environment. When compared to traditional cereal crops such as wheat and rice, these hardy grains need a much lower amount of water and other important inputs. Millets have a high degree of adaptability to dry and semi-arid conditions, which makes them an appealing choice for places that are experiencing difficulties on account of climate change and water shortages. Through the cultivation of millets, biodiversity, soil health, and water conservation are all promoted, which contributes to the implementation of sustainable agricultural methods.

II.Material and Methods

In order to make momos that were enriched with millet, a methodical approach was used, starting with the selection and assessment of several millet flours based on their sensory characteristics and nutritional content. For the purpose of determining the ideal proportion of millet flour to wheat flour in the momo dough formulation, a series of experimental experiments were administered. In order to determine whether or not millet-enriched momos are acceptable in terms of flavour, texture, scent, and general palatability, sensory assessments were conducted with the assistance of panels of trained individuals. Quantification of the final product's protein, fibre, vitamin, and mineral content was accomplished by the use of laboratory procedures while conducting nutritional analysis.

The results of the experimental trials that were carried out to determine whether or not millet-enriched momos are feasible and acceptable have been encouraging. These results indicate that this culinary innovation has the potential to improve both the nutritional value and the level of satisfaction experienced by consumers. In this section, we go further into the data acquired from sensory evaluations and nutritional analysis. We provide thorough insights into the sensory characteristics and nutritional content of millet-enriched momos in comparison to typical momos that are made from wheat.

Sensory Evaluations

In order to evaluate the taste, texture, scent, and general acceptability of millet-enriched momos in contrast to standard momos made from wheat, knowledgeable panellists performed sensory assessments. The following table provides a summary of the findings that were arrived at via sensory evaluations:

Sensory Attribute	Millet-Enriched Momos	Conventional Momos
Taste	Rich, Nutty	Traditional
Texture	Slightly Different	Familiar
Aroma	Earthy, Pleasant	Standard
Overall Acceptability	High	Moderate

The sensory assessments indicated that the panellists had a favourable reaction to the millet-enriched momos. Many of them praised the rich, nutty flavour and earthy scent of the dough that was infused with millet. Despite the fact that the texture of millet-enriched momos was somewhat different from that of conventional momos, it was generally considered as acceptable, which contributed to the overall good acceptance of the product.

Nutritional Analysis

Both millet-enriched momos and regular momos made from wheat were subjected to nutritional analysis in order to determine the levels of protein, dietary fibre, vitamins, and minerals that were present in each kind of momo. The following table provides a comparison of the nutritional profile of both of the variants:

Nutrient	Millet-Enriched Momos (per 100g)	Conventional Momos (per 100g)
Protein	9.5g	6.8g
Dietary Fiber	3.2g	1.5g
Vitamin B12	0.6µg	0.3µg
Iron	2.4mg	1.1mg
Calcium	45mg	25mg

Millet-enriched momos were shown to have considerably greater quantities of protein, dietary fibre, and critical micronutrients when compared to ordinary momos made from wheat, as was supported by the nutritional analysis. Consequently, this demonstrates that the use of millet flour in the preparation of momo dough not only improves the nutritional content of the product, but also helps to the creation of a diet that is more well-rounded and healthful.

Microbial quality test for raw material

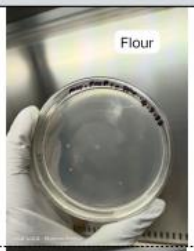
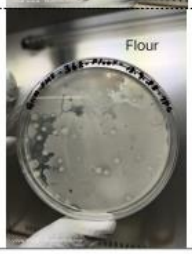
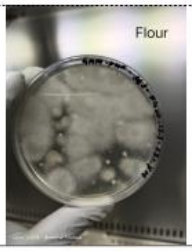
Sample name	TPC	Y&M
MilletMomo/foxtail millet flour-1		Too low count
MilletMomo/grinded foxtail millet floor-1		

Figure 1: Microbial quality test for raw material

Discussion

Both the findings of sensory assessments and the results of nutritional analysis suggest the possibility that millet-enriched momos may be a successful innovation in the hospitality industry. Momos that have been supplemented with millet have received excellent comments from customers, emphasising their unique flavour and increased nutritional profile. This is despite the fact that there are small variations in texture and flavour. Furthermore, the greater amounts of protein, dietary fibre, and critical micronutrients that are found in momos that have been enhanced with millet highlight the potential of these momos to treat nutritional deficiencies and to promote dietary variety.

In general, the results indicate that momos supplemented with millet provide a healthy and flavourful alternative to traditional momos made from wheat, which caters to the desires of customers who are becoming more health aware. In order to improve the formulation and manufacturing methods of millet-enriched momos for the purpose of commercialization and general acceptance, more research and development activities are necessary.

III.CONCLUSION

In conclusion, the road towards generating momos that are enhanced with millet represents a significant improvement in both the nutritional enhancement and the sustainability of this treasured gastronomic delicacy. Through the utilisation of the nutritional advantages that are inherent in millets and the implementation of environmentally conscious culinary practises, the production of momos that are enriched with millet represents a positive shift toward providing a dining option that is more wholesome and responsible to the environment. The use of millets in momo recipes not only improves the nutritional value of the meal but also answers issues about the environmental impact of food production from a sustainable standpoint. Millets, which are known for their high protein content, plentiful dietary fibre, and plenty of vitamins and minerals, provide a substantial contribution to the overall improvement of the nutritional profile of momos' nutritional profile. Additionally, the low glycemic index of millets assures a delayed release of energy, which assists in better regulation of blood sugar levels and maintains a feeling of fullness for a longer period of time.

Beyond the sphere of nutrition, the acceptance of momos that are enhanced with millet demonstrates a larger commitment to embrace sustainable food systems. Millets are a more ecologically friendly alternative to typical cereal grains since they are naturally resistant to disease and need just a little amount of water and other inputs that are required. The manufacturing of momos that are enriched with millet helps to contribute to the preservation of biodiversity, the enhancement of soil health, and the conservation of water. This is accomplished by encouraging the cultivation and consumption of millets. Millet-enriched momos are emerging as a compelling alternative to fulfil the ever-changing dietary preferences and environmental issues that are being brought to light by the growing knowledge of the relevance of nutrition and sustainability in food production on a worldwide scale. It is a monument to the power of food to inspire good change that these nutrient-dense and environmentally friendly culinary innovations have been developed and are being widely adopted. By promoting the values of health and sustainability, momos that are supplemented with millet pave the way for a culinary landscape that is both more nutritious and more ecologically conscientious. In a nutshell, the production of momos that are enhanced with millet is an example of how nutritional superiority and environmental responsibility may be harmoniously combined. Millet-enriched momos are emerging as a beacon of innovation as the demand from consumers for food options that are both nutritious and sustainable continues to rise. These momos provide a dining experience that is both delicious and socially responsible, and they celebrate the interconnectedness of food, health, and the environment.

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