SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 12 | December 2024 - Peer Reviewed Journal

A REVIEW ON NUTRITIONAL PRODUCTS FROM MUSHROOM

Miss. Pooja Keskar, Dr. Anil V. Landage

ABSTRACT

In terms of size, nutritional value, and feelings of hunger and thirst both before and after an event, snacks differ from meals. When it comes to nutritional content, the snacks that are now on the market are high in fats and carbohydrates and low in dietary fiber and beneficial ingredients like antioxidants and polyphenols, which puts children and teenagers at serious risk for health problems. Since protein is one of the essential nutrients needed during the growing years and is deficient in snack meals, the current study aimed to create snack foods high in protein and fiber with mushrooms serving as the main ingredient. White button mushrooms (Agaricus bisporus), a spice blend, and additional ingredients were used to create two mushroom snack products: mushroom tikki and filled mushroom.[1]It is also possible to sell the mushroom snack as having "high fiber," "low sodium," and "source of protein." Additionally, this snack contained phenolic compounds, alpha-glucosidase inhibitory characteristics, and inhibitory properties for angiotensin-converting enzymes.he consumer acceptance test (n = 300) indicated that 64% of the individuals were interested in purchasing the product, with an acceptability level of 95%. The mushroom snack can also be marketed as having "low sodium," "high fiber," and "source of protein." This snack also had antioxidant properties, phenolic compounds, alpha-glucosidase inhibitory properties, and angiotensin-converting enzyme inhibitory properties. Approximately 64% of the individuals in the consumer acceptance test (n = 300) expressed interest in purchasing the product, indicating an acceptability level of 95%.[2]

KEYWORDS:- *mushroom, nutritional value , snacks , protein, enzyme, functional components , enzyme inhibition , product, antioxidant.*

INTRODUCTION

Cow's milk can be replaced with edible mushrooms and other protein sources like almonds. The non-dairy pasta flour manufactured from nuts and mushrooms was used as a foundation for a variety of food products made from nuts and mushrooms, including peanut and mushroom yogurt and yogurt prepared with components combined with nuts and mushrooms.However, the pasta cooked with nuts and mushrooms was not as good as the spaghetti cooked with cow's milk and powdered milk.This is due tothe protein in mushrooms and nuts lacks casein, an essential component of milk.Pasta flour made from nuts and mushrooms, according to Khusniati et al.[3] Numerous other health advantages of mushrooms have also been documented, including their antioxidative, antifungal, antiviral, anticancer, and hypocholesterolaemic qualities (Kim et al., 2014). According to Li et al. (2014) and Jiang et al. (2015), shiitake mushrooms are rich in nutrients and include a variety of bioactive substances, including polysaccharides, antioxidants, dietary fiber, ergo sterol, minerals, vitamins B1, B2, and C, folates, and niacin. The purpose of this study was to assess the effects of substituting defatted soybean, wheat germ, mushroom, and Moringa oleifera leaf flours from grist corn-based mixes to four distinct snacks via extrusion, as opposed to congrits snack. Evaluations included chemical, sensory, and biological aspects[4].The main reasons people eat mushrooms are for their flavor and texture. Because of their high protein, vitamin, and mineral content, low fat content (2–8%), and special biochemical makeup, mushrooms are a low-calorie food that is a good choice for those with diabetes, arthrosclerosis, obesity, and hypertension. They have also recently gained popularity as a healthy food source and as a source for pharmacological development (Singh, 2017). There is a wide utilization of mushroom from its traditional uses to medical ones (Aida et al., 2009).Around the world, there are numerous varieties of mushroom farms, and each has pros and cons. Mushrooms are a type of fungus that feeds on stems or the soil.The mushrooms that are available in our country include shiitake, oyster, button, cucumber, golden cauliflower, and more.There are two types of oyster mushrooms:

Pleurotus Florida, or white oyster mushrooms, and Pleurotus Pulmonarius, or gray oyster mushrooms.Because oyster mushrooms can benefit those who consume them, their selection is ideal for inventing a frozen product. Products like oyster mushroom nuggets can benefit a lot of customers. In addition to offering a range of nutrients, frozen oyster mushroom nugget products are ideal for kids since they may consume nuggets created .A mushroom's good savory flavor and bite-size texture make it a popular dish.The caps of the mushrooms are thin and broad, resembling fans or oysters, and they have gills on the underside. The mushrooms are typically white, grey, or brown in color.Indeed, due of their bioactive makeup, mushrooms get a lot of interest from academics studying food and medicine. The biomolecules present in mushrooms, such as polysaccharides, steroids, resin structures, and phenolic chemicals, exhibit a range of biological functions[5].

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 12 | December 2024 - Peer Reviewed Journal

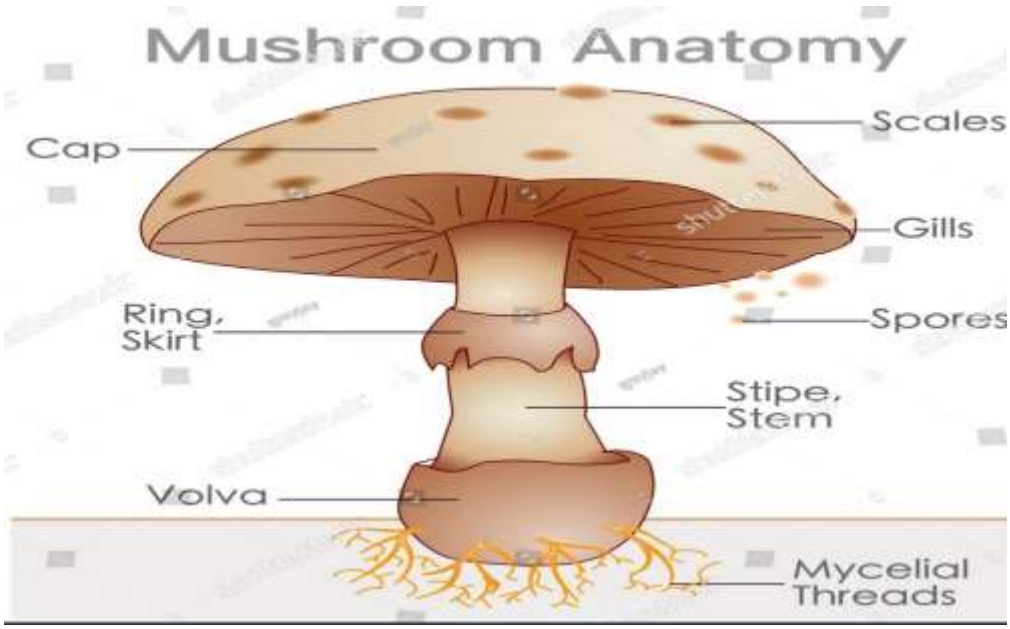


Fig.1

METHODS OF PREPARATION

1. Bread preparation

Powdered mushrooms were made using the technique described by [10]. The straight dough method was used to make the bread samples (AACC, 2000). 500 g of wheat flour, 30 g of granulated sugar, 7.5 g of salt, 7.5 g of yeast, 25 g of oil, and 300 mL of water were needed for the recipe. Using a mixer (Brabantia, Eindhoven, Netherlands) set to speed 1, the dry ingredients, water, yeast, and wheat flour were combined to form the dough for five minutes.The machine was turned off after ten more minutes at speedthree to allow the elastic dough to come together. The dough was permitted to rest for half an hour before being hand-kneaded for five minutes.The 100 g portions of dough were separated, carefully rolled, rounded, and baked.[6]

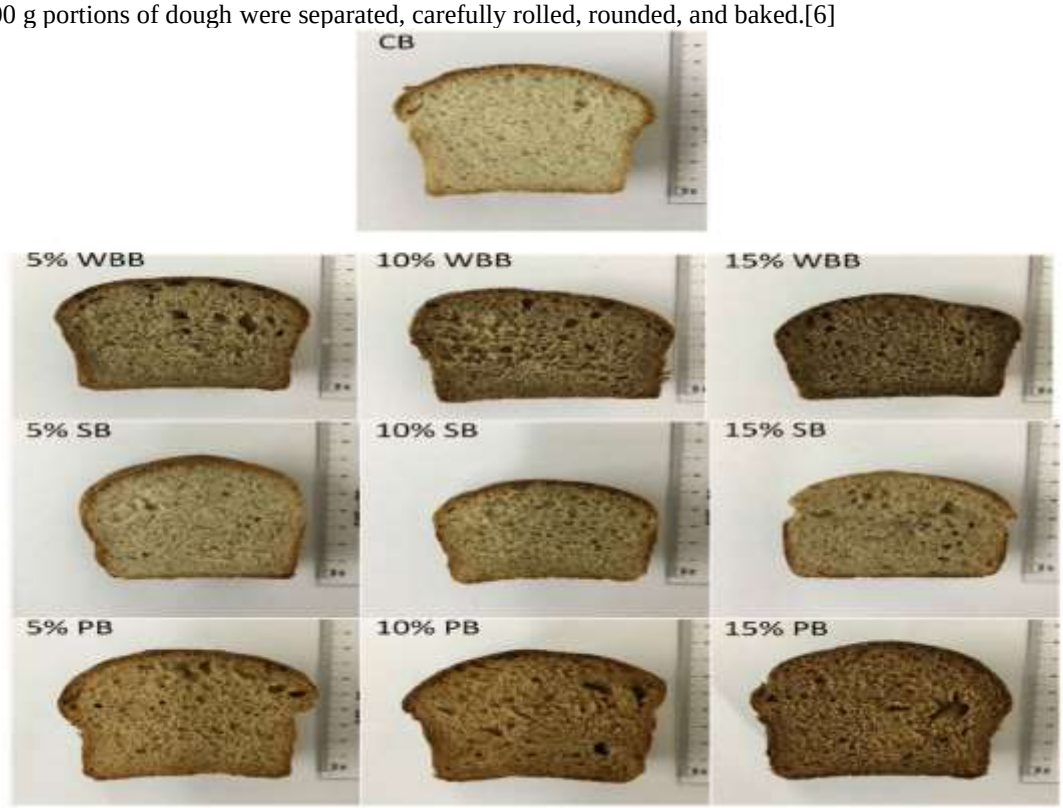


Fig.1

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 12 | December 2024 - Peer Reviewed Journal

2.Mushroom Powder Preparation

Two types of mushrooms were harvested within twenty-four hours of each other: oyster mushrooms (Pleurotus ostreatus (Jacq.) P. Kumm.) and white button mushrooms (Agaricus bisporus (Lange) Sing.). The mushrooms were acquired straight from the mushroom grower. Before the treatments, the raw components were chilled for storage. On a wet weight basis, the moisture content of button mushrooms was 92.19%, whereas that of oyster mushrooms was 90.51%. The early phases of mushroom preparation were washing and cutting into slices (3–4 mm). The raw material wasfrozen at -80°C for 24 hours, and then dried in a lyophilizer (Christ Alpha 1-2 LD plus, Germany) for 72 hours. The resulting lyophilisates were processed into flour in a laboratory mill (Retsch GM200, Retsch GmbH, Haan, Germany) at 8000 rpm for four minutes. Next, the particles were sieved.[7]



Fig.2

3.Making the Shortbread Cookies

The following components were used to make the shortbread biscuits (control samples): Agrowita Sp. z o.o., Moja Kurka, 40 g of yolk, 100 g of powdered sugar (Pfeifer & Langen Marketing Sp. z o.o., Diamant), 240 g of butter (Mlekovita, 82% fat), and 360 g of wheat flour (GoodMills Polska Sp. z o.o., Plony Natury, type 450). Powdered lyophilisates (2%, 4%, and 6% w/w) were partially substituted for wheat flour to create different variations of cookies. A Thermomix TM6 (Vorwerk Elektrowerke GmbH & Co. KG, Wuppertal, Germany) was used to prepare the dough. First, two minutes were spent mixing the flour and sugar. Then, the dough was stirred for another 3 min after adding the butter and next the yolk.[8]



Fig.3

4.Production of Cupcakes

Using varying degrees of composite flour (Table 1) in place of wheat flour, the cupcakes were made using the Rahut et al. (2012) method. Figure 1 shows the cake production process. Accurate measurements were taken for each cupcake's ingredients, which included wheat flour, orange-fleshed sweet potatoes, mushrooms, and shortening (Golden Penny Margarine, Flour Mills of Nigeria). The ingredients were then combined in a bowl with a mixer (Kenwood, A901) until the batter was frothy and creamy.[9]

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 12 | December 2024 - Peer Reviewed Journal



Fig.4

Ingredients

a) Wheat flour
b) Orange fleshed sweet potato
c) Mushroom
d) Sugar
e) Shortening
f) Baking powder
g) Whole eggs

Procedure

a. Weighing of material (wheat flour , mushroom and of sp.)
b. Mixing of sugar and shortening
c. Addition of one whole egg and mixing
d. Addition of flours made from mushrooms, orange-fleshed sweet potatoes, and wheat
e. Mixing of batter
f. scrapping of sticky batter
g. Mixing another whole egg with the batter
h. Portioning of batter into pans
i. Baking at 170°C for 40 min.
j. Cooling
k. Cake

5. Preparation of Dried Mushroom

After being cleaned with tap water, the oyster mushrooms were blanched for seven minutes in steam, dried for five hours at 60°C with an air fan in a thermostatically controlled oven, and then ground in a laboratory disc mill to pass through a 20 mesh/inch screen (Deshpande and Tamhne, 1981).

Beneficial effects of Mushrooms on Human and Animal Health & Their Nutrition

Although studies on the effects of mushrooms on human health have only recently become interesting, particularly in Europe, the use of mushrooms in Chinese folk medicine and other Eastern countries has long been known (Wasser 2014; Gründemann et al. 2020). Furthermore, because of the actions of bioactive substances on the human body, consumers' attention is increasingly being drawn to the role that include mushrooms in the diet can play in promoting health and lowering the risk of disease.Biological response modifiers (BRMs), which are antitumor MM medicines, are used to treat various cancer kinds and patients receiving chemotherapy and radiation therapy. By minimizing side effects and preventing cancer progression, BRMs improve patients' quality of life. Many MM products have been created thus far for both commercial and therapeutic uses, particularly from species that are common and utilized in the East.[10]

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 12 | December 2024 - Peer Reviewed Journal

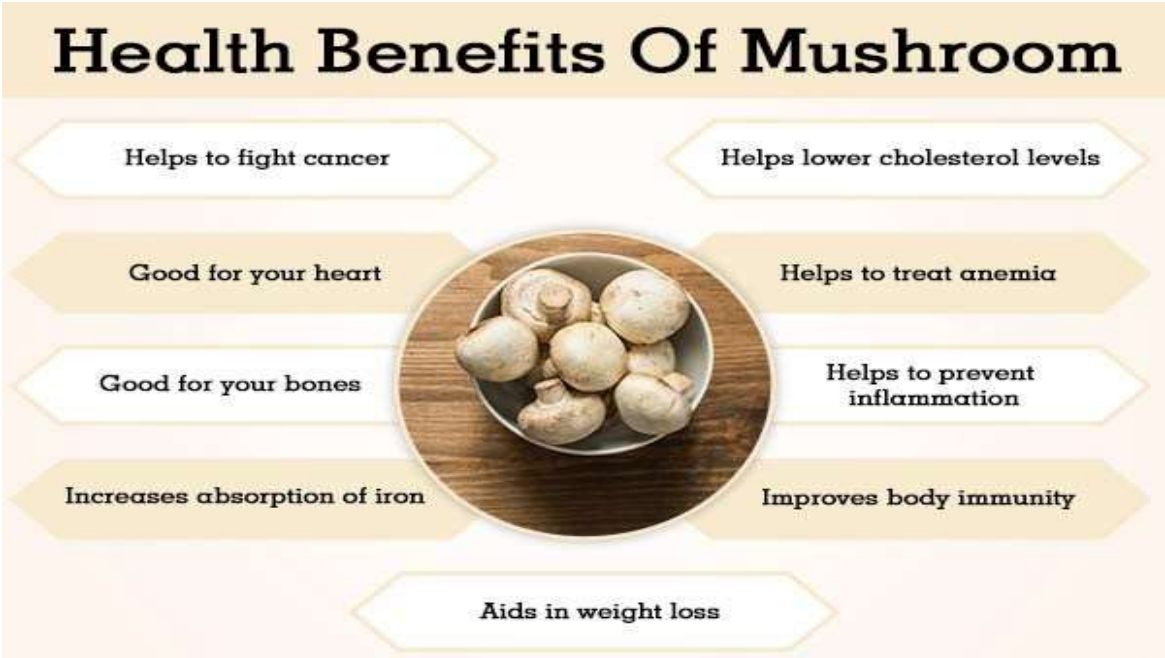


Fig.5

Advantages of Mushroom
- Improves Heart Health
- Good For Diabetes
- Boosts Immunity
- Lowers Blood Pressure
- Keeps Brain Healthy
- Improves Digestion

DISCUSSION AND RESULT

A crucial component of bread quality, loaf volume offers a qualitative gauge of baking performance. The order of the specific volume decrease was Control > 5% > 10%. In general, adding more proteins to gluten-free bread results in a lower specific volume; however, the nutritional benefit was still apparent despite the negative effects on instrumental quality metrics. A high specific volume indicates a higher crumb porosity,which is linked to freshness, making it a desirable quality (Cauvain., 2015). There are two reasons for the decrease in loaf volume: 1) being unable to contain carbon dioxide that has fermented because of fiber weaning, or damaging the structure of the dough because of a decrease in glutenin, as noted by Matsushita et al.

CONCLUSION

The protein, fat, ash, and fiber content of the cake were all increased by the addition of mushroom powder. As the amount of mushroom powder in the recipe grew from 5% to 15%, the cake's protein, fat, ash, and fiber content increased while its sugar content decreased. The results of the organoleptic trait test showed that the amount of mushroom powder used had a significant impact on the color, flavor, texture, and overall acceptability of the cakes; however, partial substitution of 10% mushroom powder with wheat flour produced more gratifying results. The results show that adding 10% mushroom powder to a cake without eggs can successfully boost its nutritional value without sacrificing its acceptable sensory qualities.The effectiveness of mushroom powder as an addition in bread recipes was assessed in this study. The conducted investigation demonstrates the impact on the particular volume, texture, and color of the bread. In summary, there is a certain volume reduction in mushroom bread. Based on the findings of the texture investigation, the mushroom powder adds to the bread's increased firmness, rubberiness, and springiness. Moreover, there was less cohesiveness and softness in the mushroom bread. In terms of hue, the mushroom bread was likewise darker than the control. The choice of mushroom powder, however, is up to the individual. However, it seems like mushroom powder might work well as an extra component in bread goods.

REFERENCE

1. *Pallavi Rachappa, Devaki Chandrashekar Sudharma , Om Prakash Chauhan ,Prakash Ekanath Patki, Roopa Nagaraj , Shekhara , NaikRama Naik.Development and evaluation of white buttom mushroom based snacks. Journal of food processing and technology.I food process trchnol, Vol.11 Iss.3 No: 824*

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 12 | December 2024 - Peer Reviewed Journal

2. *Chanakan KHEMTHONG, Rungrat CHAMCHAN, Uthaiwan SUTTISANSANEE, Somsri CHAROENKIATKUL, Chaowanee CHUPEERACH and Nattira ON-NOM .Development of Healthy Snack from Sa-med Mushroom (Boletus griseipurpureus Corner). Walailak journal*
3. *T khusniati , A Widiawati, s Yuningtyas ,and Sulistiani. Improvement of yogurt quality from mushroom and nuts by the addition of Amyloproteolytic from Lactobacillus satsumensis EN 38 - 32.*
4. *Biological evaluation of snacks supplemented with natural source of high protein Fatma M.I Shahin. Middle East journal of Applied sciences.*
5. *Nebahat sule Ustin , Sanem Bulam , Aysun Peksen. The Use of Mushrooms and Their Extracts and Compounds in Functional Foods and Nutraceuticals*
6. *Abdul Rasid Abdul Razzaq , Syed Shikh Syed A. Kadir, Che Noor Nura Adilla Che Ahmad, Abdul Wafi Abdul Rahman, Hairuddin Harun, Mohd Akmal Rohiat & Raden Mohd Farhan Helmi Raden Ismail.Processed Food Innovation using Oyster Mushroom.*
7. *Xikun Iu ,Margaret A. Brennan , wenqiang Guan, jie Zhang Li Yuan , and Charles s. Brennan. Enhancing the nutritional properties of bread by Incorporating mushroom Bioactive compound: the manipulation of the pre- Dictive Glycemic Response and the phenolic properties.*
8. *Aneta Stawinska, Ewa Jablonska - Rys and waldemar Gustaw. Physico- chemical , sensory and nutritional properties of shortbread cookies Enriched with Agricus bisporus and pleurotus ostreatus powder.*
9. *Grace O. Babarinde , Lydia T. Adeola functional and nutritional characterization of cupcakes produced from blends of mushroom orange - fleshed sweet potato and wheat flour. Polish journal of natural science .*
10. *Francesca cateni , Maria Letizia Gargano, Givseppe procida , Givseppe Venturella fortunato cirlincione , Valeria Ferraro.*
11. *https://www.shutterstock.com/image-vector/mushroom-anatomy-structure-parts -cap-skirt-2205522239.*
12. *https://www.mdpi.com/foods/foods-10-00731/article_deploy/html/images/foods-10-00731-g001.png.*
13. *https://images.app.goo.gl/k9FaW5wXZ8XPyHT87.*
14. *https://www.shutterstock.com/image-photo/falling-sponge-cakes-butter-cookiesisolated-2392968523.*
15. *https://images.app.goo.gl/1YnjypgeWBYJqEzD7.*