



Daffodil
International
University

A project Report

On

Development and Quality evaluation of mushroom enriched biscuits

Submitted to

Dr. Md. Bellal Hossain

Professor & Head

Department of Nutrition & Food Engineering

Faculty of Allied Health Sciences (FAHS)

Daffodil International University

Submitted By

Nusrat jahan Nishat

ID - 151-34-384

Department of Nutrition & Food Engineering

Daffodil International University

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LETTER OF TRANSMITTAL

Date: 25 June, 2019

Prof. Dr.Md. Bellal Hossain

Head

Department of Nutrition & Food Engineering

Daffodil International University

Subject: Submission of project report

Dear Sir,

I am here to present the report of my project, which is part of the curriculum of the NFE program. It is a great achievement to work in their active supervision. This report is based on the development and evaluation of the quality of mushroom-enriched biscuits at Daffodil International University. This project gave me academic and practical exhibitions. First, I learned how to increase product quality using Mushroom. Secondly, the condition of the processing requirement for the fungus. This project gives me the opportunity to develop a network with the processing field in Bangladesh.

I would appreciate if you kindly received this report and provided your valuable judgment. I would like this report to be useful and informative to allow you to have an apparent problem.

Yours Sincerely,

.....

Nusrat Jahan Nishat

ID: 151-34-384

Department of Nutrition & Food Engineering

Faculty of Allied Health Science

Daffodil International University

CERTIFICATE OF APPROVAL

I am pleased to certify that the report of the Project on the development and evaluation of the quality of biscuits enriched with mushrooms at the Daffodil International University, conducted by Nusrat Jahan Nishat ID: 151-34-384 of the Department of Nutrition and Food Engineering was approved for Defense / Long live. Under my supervision, Nusrat Jahan worked in the laboratory of Daffodil International University.

I am pleased to certify that the data and evidence presented in the report are a true work of Nusrat Jahan Nishat. I strongly recommended the report presented by Nusrat Jahan Nishat for further academic and defense / Viva-voce recommendations. Nusrat Jahan Nishat has a strong moral character and a very beautiful personality. In fact, he has a great pleasure working with him. I wish you all the success in life.

Prof. Dr.Md. Bellal Hossain



Head and
Supervisor
Department of Nutrition & Food Engineering
Faculty of Allied Health Sciences,
Daffodil International University

DECLARATION OF AUTHRSHIP

I, Nusrat Jahan Nishat , declare that this title Development Quality evaluation of mushroom enriched biscuits based sweet biscuit ,and the work presented in it are our own. I confirm that :

- When the thesis is based on the work done by others, we have clearly established what others have done and what I have contributed.
- Where I consulted the published work of others, it was clearly indicated.
- This work was carried out in its entirety during the candidacy for a research diploma at this university.
- Where I mentioned the work of others, the source is always given. With the exception of these appointments, this thesis is entirely our work.
- I recognized all health sources.

Acknowledgement

I constantly prefer to bow my head before Allah Almighty for His interminable gift to finish the activity effectively. At first, all the applause and more profound feeling of appreciation are because of Almighty God, the high maker of the universe, who has enabled us to effectively finish this undertaking relationship.

I accept this open door to express my genuine regard and my profound feeling of appreciation to my director, Prof. **Dr.Md. Bellal Hossain** Department of Nutrition and Food Engineering, International Daffodil University, for its extraordinary intrigue, a substantial guide, indefatigable endeavors and recommendations made during the exploration and composing of the undertaking report.

We accept this open door to express our earnest regard and our most profound feeling of appreciation to Professor and Director **Dr. Md.Bellal Hossain**, Director of the Department of Nutrition and Food Engineering International University of Daffodils.

I am additionally appreciative to all things and MR. ELAHI and MR. EMDAD HOSSAIN research facility right hand of Daffodil International University, for their coordinated effort during the undertaking work.

The Author

ABSTRACT

The investigation concentrated on the planning of scones dependent on mushrooms from locally accessible crude materials and on the assessment of the fixings on the quality and on the agreeableness of bread rolls dependent on arranged mushrooms. Mushroom powder was set up from dried mushrooms at 60 ° C for 8 hours in a microwave. . The crisp mushrooms were cleaned, cut into cuts (around 3 mm thick) and dried at 60 ° C for 8 hours. At that point blend in the research facility. The flour was set up from entire wheat in the plant. Mushroom powder, salt, dalda, flour, palm oil, egg are broke down by their creation. First every one of the fixings are estimated by the formula. At that point smash the sugar with a fine powder with a smasher. At that point I mellowed the dalda, until it moved toward becoming cream. And after that I need to relax the eggs for a couple of minutes. At that point I included flour, mushroom powder, palm oil, sugar, preparing powder and sugar syrup to a mixture, I blended the batter by hand and held it for 20 minutes, I framed the bread rolls with a shape and place them in a form. a plate. At that point coat the highest point of the bread with an egg with a brush. Spot the plate for 36 minutes at 190 ° C and check following 20 minutes. Following 36 minutes, expel the plate and let it cool. The readied treats have been tried with a board of 10 analyzers. The shading, taste, consistency and general agreeableness of the considerable number of tests were not comparable. The treats made by a sun powered dryer were more adequate than the others as far as shading, taste, consistency and general worthiness.

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Chapter 1

INTRODUCTION

A parasite is the organic product bearing body, plump and like the spores of a growth commonly delivered above soil in the ground or in its sustenance source. Without buds, without leaves, without blooms, they prove to be fruitful; as sustenance, as a tonic, as a medication, all creation is valuable. The mushrooms are a piece of the types of mushrooms, portrayed by marvel. The word mushroom can mean various things to various individuals in various nations. In an expansive sense, Mushroom is a specific fruiting body of a full scale growth, which produces spores that can be epigeal or hypogenic and enormous enough to be seen with the unaided eye and hand picked. These mushrooms don't should be individuals from the Basidiomycetes gathering, as they are normally related, neither airborne, nor meaty, nor palatable. The growth can be utilized for tonics, sustenances, cosmeceuticals and as normal organic control operators in the security of plants with fungicide, antitoviral, bug spray, herbicide and nematocide movement. Besides, mushrooms can go about as specialists to advance reasonable financial development. A mushroom is the meaty and ripe body of an organism that produces spores, which is generally created in the dirt or in its sustenance source. The standard for the name "mushroom" is the developed white growth, Agáricos Bosphorus, so the word mushroom is more it is frequently connected to mushrooms (Basidiomyce, Agaricomyceti test) which have a stem (strip), a top (heaps) and gills (lamellae, lamela sings) on the base of the top simply like the white mushrooms obtained in the shop However, "mushroom" it can likewise allude to a huge assortment of developed mushrooms, with or without stems, and the term is additionally utilized all the more for the most part to depict both the plump natural product

Chapter 2

REVIEW OF LITERATURE

The chapter reveals the available works, researches, results & findings in respect of production, formulation for button & Oyster mushroom to make biscuits. However the available literatures are discussed below.

The section uncovers the works, the exploration, the outcomes and the outcomes accessible in connection to the generation, Plan for catch and clam mushroom to make treats. Anyway the accessible literary works. they are talked about beneath.

2.1 Production of oyster mushroom

The growth is an enormous conceptive structure of eatable mushrooms, which is the most well known Nutritious, delectable and restorative vegetable of the world. Presently it is a standout amongst the most promising. Concepts for harvest enhancement in Bangladesh. The climatic state of Bangladesh is Perfectly appropriate for mushroom development. It doesn't require arable land. can Grow in the room infiltrates vertically. Along these lines, its presentation, just as the advantages per unit region are more noteworthy of some other vegetable in our nation. It requires brief period, minimal capital and simple strategy. for development. A large portion of the creation of clam mushrooms in our nation is occasional. Development is completed utilizing customary strategies. All in all, unpasteurized fertilizer is utilized, along these lines, returns are exceptionally low. (3) However, lately, the exhibition of shellfish mushrooms has expanded after the presentation of improved agronomic practices. Greatest yield of clams mushroom (*Pleurotus sajor-caju*) during the stormy seasons, when the temperature was just about 20-26 0C and relative mugginess 70-90%.

2.2: Production and composition of Oyster Mushroom:

Table 2.2: Proximate composition of Oyster Mushroom per 100g

Name	Amount
Calories	43.0gm
Carbohydrate	26.1gm
Fat	3.7gm
Protein	13.2gm
Fiber	2.3gm
Minerals	11g

Clam mushrooms an incredible method to address a conceivable iron deffiency particularly on the off chance that you don't eat much meat, which can help forestall pallor, low vitality, poor focus and shortcoming.

Chapter 3
MATERIALS AND METHODS

3.1 Sources of Materials and Preparation

Ingredients	Amount
Wheat Flour	167 gm.
Sugar	63 gm.
Mushroom Powder	7 gm.
Dalda	63 gm.
Baking Powder	3 gm.
Palm Oil	21 gm.
Egg	3 p
Vanilla flavor	2 drop

Processing Methods

3.2 Production of mushroom flour

The mushroom powder was set up as appeared in Figure 1. The crisp mushrooms were cleaned, cut into cuts (around 3 mm thick) and dried at 60 ° C for 8 hours. The dried mushroom test was ground independently in an electric processor and sieved through a 80 work screen to acquire fine powders. The powder got was cooled and cleanly bundled and put away in a sealed shut holder for later use.

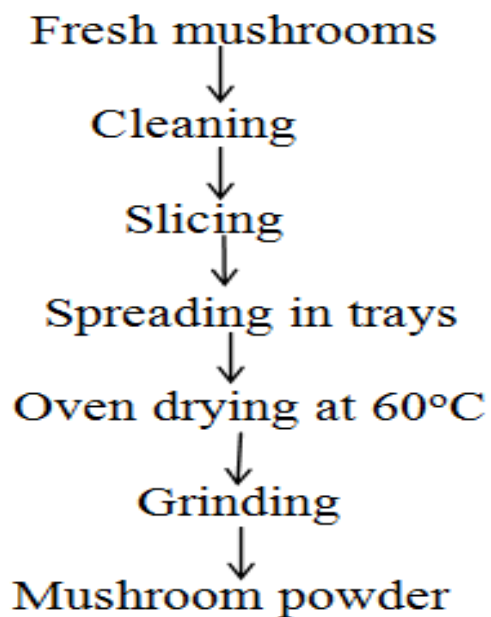


Fig. 1. Flow chart of preparation of mushroom powder

Equipment's:

- Spatula
- Oven (Electrical)
- Jar
- Knife
- Digital Mixing Machine
- Beaker
- Mash Filter Net
- Chopping board
- Table Spoon
- Blender
- Sauce-pan
- Hand gloves
- Apron
- Working table (place)
- Musk
- Hair cap

3.3: Production Flow Chart

This investigation was directed in the lab of the Department of nourishment and sustenance building, Daffodil International University, Ashulia Campus and Dhaka, Bangladesh. Crude materials are gathered from locally accessible crude materials. Flowchart: gather the catch and the shellfish mushroom at first, dry it and move it to powder.



Fig. 2. Flow chart for mushroom-wheat biscuit production

3.4 Preparation of mushroom biscuits

1. At first measure all ingredients according to recipe.
2. Then crushing sugar to fine powder with a crusher.
3. Then I have to bland dalda, until it turned into cream. And after that I have to bland eggs for few minutes.
4. Then add flour, mushroom powder, palm oil, sugar, baking powder and sugar syrup thoroughly until a dough is produced.
5. Mix the dough by hand thoroughly and keep the dough for 20 minutes. Then shape the biscuits with a mold and put them in a tray.
6. Glaze top of the biscuit with an egg by a brush.
7. Put the tray into for 36 minutes at 190 degree Celsius. Check after 20 minutes. After 36 minutes take out the tray and cool.

Analytical test: Chemical analysis of the raw materials: The mushrooms were dissected for their dampness, all out sugar, protein, fat and fiery debris substance. The outcomes were communicated as the normal of three qualities

3.5: Moisture Content Test:

Toward the starting the loads of 3 void dry cauldrons were taken and 5 g of mushroom powder were taken.caught in each pot. At that point, the pots were dried in an air broiler at 100 ° C medium-term. The cauldrons were cooled in dryers. The pots were expelled from the dryers and weighed.Shortly in the wake of achieving room temperature. Weight misfortunes were assumed as a dampness loss of the examples and the level of moistness in the examples were determined as pursues:

$$\% \text{ moisture} = \frac{\text{Loss in weight}}{\text{Weight of sample}} \times 100$$

Result: Moisture 2%

3.6: Determination of Protein

Raw Materials: 1. H₂SO₄

2. Digestion Mixture

3. 40% NaOH
4. .1 N HCL
5. Methyl red indicator
6. .1 N NaOH
7. H₂O

Procedure:

- 1.) An example of 0.4 Gm was taken with 10 ml of H₂SO₄ and 2 g of absorption blend and put in the processing cup.
- 2.) Two processing containers were taken to get the normal outcome.
- 3.) After the warmth connected gradually up to 3-4 hours.
- 4.) This absorption procedure was hindered when there was no smoke of H₂SO₄, they were created and settled Produces straightforward glass
- 5.) Then it stayed cold.

Distillation:

1. The solution was poured into a volumetric flask and reached the level of 100 ml using H₂O.
2. Then 10 ml of solution were brought into the distillation flask of a conical flask.
3. 150 ml of distilled water and 10 ml of 40% NaOH were added to the distillation flask.
4. 50 ml of H₂O and 10 ml of 0.1 N HCL and 2 drops of red methyl indicator were mixed in a conical vessel ball.
5. Three distillation flasks were used in which the last was filled with other chemicals, but no samples were taken solution.
6. The duration of the distillation was 30 minutes.

Titration:

1. The titration burette was fill with 0.1 N NaOH.
2. When the solution color change from pink to light the titration was stopped.

Calculation:

$$\% \text{ Nitrogen} = \frac{(T_s - T_b \times \text{Normality of HCl} \times \text{meq. of N}_2)}{\text{Weight of sample (in g)}} \times 100$$

Where,

T_s = Titer volume of the sample (ml)

T_b = Titer volume of the blank (ml)

Meq. Of N_2 = 0.014

% Protein = % Nitrogen × Protein factor

Result: Protein content: 0.70g

3.7: Determination of Fat

Procedure: System: the example of dry nourishment left after the assurance of moistness was moved to a thimble and the upper piece of the thimble was secured with non-oily cotton. The thimble was dropped into the fat extraction container of a Soxhlet apparatus. The base of the extraction cylinder was associated with a Soxhlet flagon. Around 75 ml or a greater amount of anhydrous ether was filled the cup. The upper piece of the fat extraction cylinder has been associated with the condenser. The example was removed for 16 hours. or then again more in a water shower at 70 to 800 ° C. The water shower was controlled so the volatilized ether consolidated and fell persistently onto the example with no obvious misfortune. Toward the finish of the extraction time frame, the thimble was expelled from the apparatus and a large portion of it The ether was refined leaving it to gather in the Soxhlet tube. The ether poured when the cylinder was practically full. At the point when the ether achieved a little volume, it was filled a little dry recepticle (recently gauged) through a little pipe containing a cotton plug. The flagon was washed and separated altogether, utilizing ether. The ether was dissipated in a low temperature steam shower, at that point dried at 1000 ° C for 60 minutes, cooled and gauged. The distinction in loads was the solvent material in ether present in the example. This procedure was trailed by the fat substance of cornmeal and potatoes. The level of unrefined fat was communicated as pursues:

$$\% \text{ Crude fat} = \frac{\text{Weight of ether-soluble material}}{\text{Weight of sample}} \times 100$$

Result: Fat 0.34

3.8: Determination of Ash content

The examples are weighed after and before ashing to decide the centralization of slag present. The absolute substance can be communicated on either a dry or wet premise.

$$\% \text{ ash} = \frac{M \text{ ash}}{M \text{ dry}} \times 100$$

Procedure:

- 1) First weigh the crucible thoroughly.
- 2) Place 5 g of sample in the crucible.
- 3) It is placed in an oven at 130 for 1 hour.
- 4) Remove from the oven, cool and store in the dryers.
- 5) The samples were weighted.
- 6) The crucible was placed with a dry sample in a muffle furnace at 585 for 24 hours.
- 7) Removed from the oven, cooled and stored in the dryers until the sample is weighed.

Calculation:

Weight of ash = (wt of ash + crucible) - (wt of crucible)

Weight of dry sample = (Weight of dry sample + crucible) - (wt of crucible)

$$\% \text{ ash} = \frac{\text{Weight of ash}}{\text{Weight of dry sample}} \times 100$$

Result: Ash content: 0.15

3.9: Determination Carbohydrate:

Total carbohydrate

The complete starch substance of the examples was resolved as all out sugars by contrast, which it is subtracting proteins, fat, slag and moistness estimations of 100.

Result: 96.81 kcal.

Chapter 4

Result & discussion

For button mushroom cookies Moisture 2%, 4%, fat 0.34, 0.38, ash 0.15, 0.18, carbohydrate 96.05, 96.81

The data of the proximate Oyster Mushroom cookies are presented in the table.

4.1: Composition of Oyster mushroom Biscuits:

S. L	Moisture	Protein	Fat	Ash	Carbohydrate
2%	2%	0.70	0.34	0.15	96.05
4%	2.5%	0.89	0.38	0.18	96.81

Sensory Evaluation of cookies:

Two types of cookies have been evaluated based on their color, taste, consistency and general acceptability for a panel of 10 members. All the evaluators were BSC students of nutrition and food Engineering, Daffodil International University and have been informed before the evaluation. Three pieces Each cookie was presented to 10 speakers and a randomly coded sample. The test participants they were asked to evaluate the different pizzas formulated to them presented on a 9-point hedonic scale with the qualifications of: 9 = I really like it; 8 = I really like it; 7 = I like it moderately; 6 = I like it a bit'; 5 = Neither like nor dislike; 4 = I don't like it lightly; 3 = I don't like moderately; 2 = I don't like it much and 1 = extreme dislike.

4.2: Sensory evolution chart:

S. N (2% mushroom Powder)	Oyster Mushroom (solar drying)	Microwave drying	Cabinet dryer drying
1	5	6	8
2	7	8	7
3	6	8	7
(4% mushroom Mushroom Powder)	Oyster Mushroom (Solar drying)	Microwave Drying	Cabinet dryer drying
1	9	7	3
2	9	5	1
3	9	5	4

4.3: Average result of sensory evaluation for cookies:

S.N	Sensory Attributes			
	Color	Flavor	Texture	Overall acceptance
2% Mushroom Powder	6	7	9	6
4% Mushroom Powder	6	8	9	8

Conclusion

This thesis work was directed in the research center of the Department of nutrition and food engineering daffodil International University. The reason for the examination was to locally get ready neighborhood crude materials, to improve their quality by including mushrooms. Build up a standard system for the creation of mushroom bread rolls. The mushrooms were gathered in the neighborhood market and broke down to decide the dampness content. Along these lines, the chose catch and the mushrooms are dried in three distinct strategies. They are: sun powered drying, microwave drying and drying in the bureau. So the mushrooms were made into powder. To build the dietary benefit, these mushrooms as powder are utilized for the formula of customary scones. The most astounding earnings and the most dynamic way of life in Bangladesh as of late have driven purchasers to scan for great prepared to-eat nourishments available. Mushroom powder treats can help address the issues of purchasers of this famous quickly developing sustenance in the nation.

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