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A STUDY OF ACCEPTABILITY OF PREMIX THERAPEUTIC SOUP BY USING MUSHROOM AND GERMINATED WHEAT POWDER

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ABSTRACT

The current research intends at developing an immediate soup primer using dried mushroom powder and wheat germ flour. Four mushroom soup mix formulations comprising different amounts of mushroom powder (20-50 per cent), milk powder, wheat flour, salt, black pepper, sugar, and oregano were tested sensorial and nutritionally. The Supper Blend Formulation comprising 20% mushroom powder,60% wheat flour, 30% milk powder, 9% Salt, 2% sugar, 1% black pepper and 2% oregano were found to be most sensorial appropriate (7.76) Ratings. The mushroom soup made with that same mixture of soup was determined to be high in protein (11.80 g/ 100 g), crude fiber (4.06 g/100 g), minerals (10.6 g/100 g) and low-fat (2.89 g/100 g) carbohydrate (69.01g/100 g) and (341.09 Kcal/100 g) energy content. You can make this mushroom soup by blending 30g of soup mix (15 times) in 570 ml water with a boiling time of 2 minutes.

Keywords: Oyster mushroom, wheat germ, post harvest management, value addition, sensory testing

INTRODUCTION

Different type of soup present in market is basically liquid food it is also warm food which is combined with other food ingredients like green vegetables, carrots, chicken etc. which is boiling with water and mix some spices according to taste like black pepper, salt, oregano then extract the flavor. Soup is similar to stews. In general soup is the French cuisine there is classified in two groups: clear soup and full fluid soup. Clear soup is full of transparent water which is made by ingredient extraction after boiling like daal water and full fluid soup is thick material like puree. Soups are counted in healthy food soups are mostly in liquid form which is way to stay hydrated. Soups are boost to the immune system and helping when person is not able to chewing, swallowing feed by tubes and fighting with some major disease like digestive problem, intestine infection, ulcer, colon infection, stone, dehydration, mouth injuries, denture problem and sick too **[1]**.

Wheat

Wheat is a worldwide remarkable crop. It is grown in diversified environments. this is the major food ingredient in all over the world. Round about one- sixth of the total productive land in the world is cultivated with wheat. Wheat has a several species Triticum (family Poaceae) and their fit to eat grains. Wheat is one of the oldest and most important of the cereal crops and it is also important food product such as pasta, mycroni etc. made from wheat currently, about 95% of the wheat grown worldwide is hexaploid bread wheat, with most of the remaining 5% being tetraploid durum wheat. Wheat bran is major source of dietary fiber for preventing colon related diseases like piles, cancer and preventing gastric treating irritably Bowel Syndrome (IBS), reducing the risk of breast cancer and gallbladder disease, and all type of diabetes . Wheat bran helps constipation by speeding up the colon and increasing stool output and bowel frequency .Wheat is a rich source of minerals such as iron, phosphorous, selenium (it is also a good antioxidant), vitamins etc. Endosperm is the middle layer of the wheat **[2]**. Which is the excellent source of carbohydrate?

Wheat germ is major part of a wheat kernel and is answerable for helping the plant duplicate and spawn new wheat. Although it's separated from most processed wheat products, it is a major nutritional component of whole grain wheat. Wheat germ, by a side of the husk, is takeout from purified wheat products — like those that utilized like white

flour — so that they can be reserve for longer. Wheat germ is attach to some granolas, cereals, and cornbread, and it's also obtainable raw. It can be used as a food supplements or as a nutritional companion. Wheat germ has great nutritional value as a food additive. It's a excellent source of vegetable proteins, by a side of the fiber and healthy fats. It's also a rich source of magnesium, zinc, thiamin, folate, potassium, and phosphorus. Wheat germ is rich in vitamin E, an indispensable nutrient with antioxidant attributes. Antioxidants are believed to removed free radicals in the body, and natural origin of antioxidants are best for stop disease. Researchers also said that wheat germ can aid in increasing your immunity and help to keep your heart and cardiovascular system healthy. Whole grains can removed the risk of heart disease and help you maintain a healthy weight. White and whole –wheat flour are important ingredients in baked goods such as bread. Other wheat –based foods include pasta, noodles, semolina, burger, and couscous. Wheat is highly activated because it contains a protein called gluten which can trigger a harmful immune response in influence individual's life style **[3]**.

Wheat contains the carbohydrate 78.10% , protein 14.70%, fat 2.10%, minerals such as (zinc, iron) 2.10%, and considerable proportions of vitamin like (vitamin B complex). Wheat is good source of protein, minerals, vitamin B complex, and dietary fiber. Wheat is the rich source of selenium micronutrient. The content of selenium in wheat varies widely from about 10 microgram. The concentration of selenium in widely control the availability of the element in the soil. Wheat is work like medicine for human body. Starch and gluten provide heat and energy to the body wheat is also rich in vitamin E and selenium which is best in an antioxidant which can prevent heart disease. Wheat flour good cure of constipation and digestive disturbance it is increase immunity of body. In the wheat soluble fiber which is prevent to constipation **[4]**.

Mushroom

Mushrooms are a perfect and comfortable food that is appropriate for all age communities. These adaptable nutrient-dense meals can be drawn as an alternative for meat, fish, vegetables and fruits. It is an outstanding source of protein , vitamins (B1, B2, niacin, C , folic acid, and provitamin D ergosterol), nutritional fibers, minerals (P, K , Na, Ca, and Fe) and fat is low. It is distinctive crop food in that they are quite limited in nutritional sugar makes them perfect for patients with diabetes. Mushroom

is an outstanding source of vitamin B12, that is usually not available in plant foods and is optimal for vegetarian diets. Basically "mushroom" is plough white button mushroom Agaricus bispourus the word mushroom is most frequently petition to those fungi (Basidimycota Agaricomycetes). The word "toadstool" has evident analogies in Dutch padde stoel and German (toad-fungus, alt. word for panther cap). All types of edible mushroom various types of protein and fiber. They also contain thiamin, riboflavin, niacin and antioxidant (vitamin E, selenium) which increases immune system of the body .It is also cure the damage to cells and tissues. Mushrooms have to potential to prevent cancer and slow down the tumor formation and management of neurodegenerative disorder like Alzheimer's. Button mushrooms are one of non-animal sources of vitamin D. Mushrooms are widely used in cooking, in many cookery (notably Chinese, Korean, European, and Japanese). Some mushrooms are used as a treatments for diseases particularly their extracts including polysaccharides, glycoprotein and proteoglycans.

They contain high level of 92% water, (20% or more of the, DV) of riboflavin, niacin, and pantothenic acid (24–33% DV), with moderate content of phosphorus . Otherwise, raw white mushrooms generally have low amounts of essential nutrients. Although cooking lowers mushroom water content only 1%, the contents per 100 grams for several nutrients increase appreciably, especially for dietary minerals. The content of vitamin D is absent or low unless mushrooms are exposed to sunlight or purposely treated with artificial ultraviolet light, even after harvesting and processed into dry powder. Mushrooms uncovered to ultraviolet (UV) light produce vitamin D_2 before or after harvest by transf-orm ergosterol, a chemical found in large concentrations in mushrooms, to vitamin D_2. This is similar to the reaction in humans, where vitamin D_3 is synthesized after exposure to sunlight. Testing showed an hour of UV light exposure before harvesting made a serving of mushrooms contain twice the U.S. Food and Drug Administration's daily recommendation of vitamin D, and 5 minutes of artificial UV light exposure after harvesting made a serving of mushrooms contain four times the FDA's daily recommendation of vitamin D. Analysis also demonstrated that natural sunlight produced vitamin D_2. The ergocalciferol, vitamin D_2, in UV-irradiated mushrooms is not the same form of vitamin D as is produced by UV-irradiation of human or animal skin, fur,

or feathers (cholecalciferol, vitamin D_3). Although vitamin D_2 clearly has vitamin D activity in humans and is widely used in food fortification and in nutritional supplements, vitamin D_3 is more commonly used in dairy and cereal products **[4-7]**.

MATERIALS AND METHODS

Raw material:

Wheat flour, milk powder, sugar, salt, black pepper and oregano were bought from local market from Gomti Nagar, Lucknow, India. Mushroom powder was processed. Fresh mushrooms have been cleaned, fruit bodies removed from the cluster and drying for 20 hours in an oven at 50°C to a final humidity level of just under 5%. The dried mushrooms were therefore pounded into flour in a grinding mill. Then it was sieved into a fine powder by 0.5 mm sieve to.

Processing of premix soup: - Firstly wash raw materials like wheat germ and mushroom, then dried the ingredients. And make powder form of all the ingredients. Pour ghee in hot pan, then add all the spices like black pepper, garlic powder, onion powder salt, pinch of sugar chillies and mixed well and sauté 2-3 minutes. Add the main ingredient such as wheat germ powder and mushroom powder and then add few drops of lemon flavour and mixed it well.

Material Used In Packaging of Premix Soup: - Small transparent poly bags.

Packaging of the Soup: - Put the premix soup powder in poly bags and seal it with the help of sealing machine.

Fast mushroom soup Premix preparation:

Four mushroom soup formulations comprising differing amounts of mushroom powder (20-50%) were produced by dry mixture of corn flour, mushroom powder, salt , milk powder, sugar, oregano and black pepper **(Table 1 and Figure 1)**. Mushroom soup can be made from this supplement by heated it with fifteen times water volume and lower flames heat for two minutes with swirling.

Composition and energy content estimate:

Humidity, crude fat, ash, and dietary fiber in difference soup mix specimens were calculated using typical **AOAC (2000)** processes. Protein was measured using the conversion factor 6.25 of Kelplus Elite Ex Micro Kjeldahl. The total value of the carbohydrates was received by difference. Energy levels were determined by factor 4, 4 and 9, separately, multiplying carbohydrates protein, and fat content.

Figure 1: Different makings of mushroom soup premix

Table 1: Different makings of mushroom soup

Formulation	Oregano (%)	Milk Powder (%)	Mushroom Powder (%)	Wheat Flour (%)	Salt (%)	Sugar (%)	Black pepper (%)
1	2%	30%	20%	60%	9%	2%	1%
2	2%	30%	30%	50%	9%	2%	1%
3	2%	30%	40%	40%	9%	2%	1%
4	2%	30%	50%	30%	9%	2%	1%

Sensory characteristics:

A jury of 9 untrained panelists measured the sensory qualities of soup mix samples for various sensory attributes. Quality evaluation such as color & appearance, thickness, scent, flavor and appropriateness for all samples were evaluated using a hedonic scale of nine points. Hedonic scale was in the following sequence: as extreme-9, as very much-8, as moderately "7, as mildly-6, neither like nor dislike-5, dislike mildly 4, dislike moderately- 3, dislike very much-2, dislike highly-1 (BIS, 1971)

Processing of premix soup: - Firstly wash raw materials like wheat germ and mushroom . than dry the ingredients. And make powder form of all the ingredients. Pour ghee in hot pan, then add all the spices like black pepper, garlic powder, onion powder salt, pinch of sugar chillies and mixed well and sauté 2-3 minutes. Add the main ingredient such as wheat germ powder and mushroom powder and then add few drops of lemon flavour and mixed it well.

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RESULT AND DISCUSSIONS

Sensory evaluation of packed and partially processed premix soup powder by expert panel members on hedonic scale and was done on the four parameters-

- Body and texture
- Colour and appearance

- Flavour and taste
- Overall Acceptability

Parameter 1: Body and texture

Table 2 shows that the most accepted sample was T1 and sample T4 by sensory panellist member it gets highest scoring for body and texture. Then after sample T2 and sample T3 respectively **(Figure 1)**.

Parameter 2: colour and appearance

Table 3 shows that the sample T1 is most accepted among the sensory panelist member and it gets highest scoring for color and appearance. Then after sample T2, T3 and T4 sample respectively. Sample T3 have higher score for color and appearance, sample T4 have least score of color and appearance **(Figure 2)**.

Parameter 3: Flavor and Taste

Table 4 it shows that the sample most accepted sample was T1 and T2 by sensory panelist members and its gets highest scoring for flavor and taste. Then after sample TT3and sample T4 respectively. Sample T4 have lower score for flavor and taste **(Figure 3)**.

Parameter 4: Overall Acceptability

Table 5 it shows that the sample most accepted sample T1 by sensory panelist members and its gets highest scoring for overall acceptability. Then after sample T2 &T3 sample respectively. Sample T4 hove lower score for overall acceptability **(Figure 4)**.

Overall Calculation

Overall calculation are done to know most acceptability of the product in all term of quality by sensory evaluation scoring given by the panelist members, in this all scoring of texture, color, flavor and taste are calculated in the table, by this we get do statistical analysis and standard deviation, average and other calculations **(Table 6, Figure 5)**.

Table 2: Individual Marking For Body and Texture

	T1	T2	T3	T4
Member1	8	8	8	8
Member2	8	7	7	8
Member3	7	8	7	9
Member 4	8	7	8	7
Member 5	7	8	8	7
Member 6	8	8	9	8
Member 7	9	9	8	8
Member 8	8	8	7	9
Member 9	8	7	7	7
Total	71	70	69	71

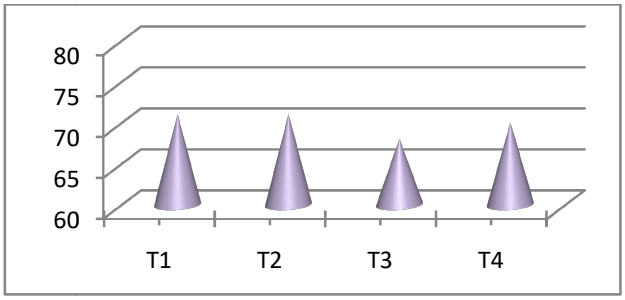

Figure 1: Graphical Representation- Body and texture

Table 3: Individual marking for colour and appearance

	T1	T2	T3	T4
Member 1	**8**	**8**	**9**	**8**
Member 2	**8**	**8**	**8**	**7**
Member 3	**9**	**7**	**7**	**8**
Member 4	**8**	**8**	**8**	**8**
Member 5	**8**	**9**	**7**	**8**
Member 6	**9**	**9**	**7**	**7**
Member 7	**8**	**8**	**8**	**7**
Member 8	**8**	**8**	**8**	**8**
Member 9	**9**	**8**	**8**	**8**
Total	**75**	**73**	**70**	**69**

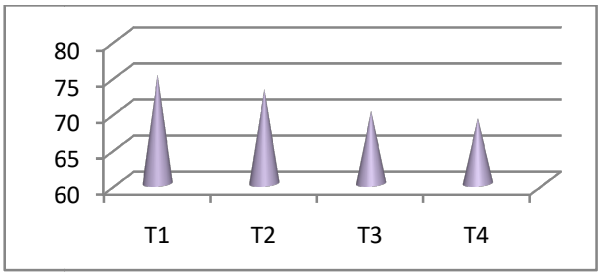

Figure 2: Graphical presentation of color and appearance

Table 4: Individual marking for flavor and taste

	T1	T2	T3	T4
Member 1	**8**	**9**	**8**	**8**
Member 2	**8**	**8**	**8**	**8**
Member 3	**7**	**8**	**7**	**8**
Member 4	**8**	**9**	**7**	**7**
Member 5	**8**	**8**	**9**	**9**
Member 6	**9**	**8**	**8**	**7**
Member 7	**9**	**7**	**9**	**8**
Member 8	**8**	**8**	**7**	**7**
Member 9	**8**	**8**	**8**	**8**
Total	**73**	**73**	**71**	**70**

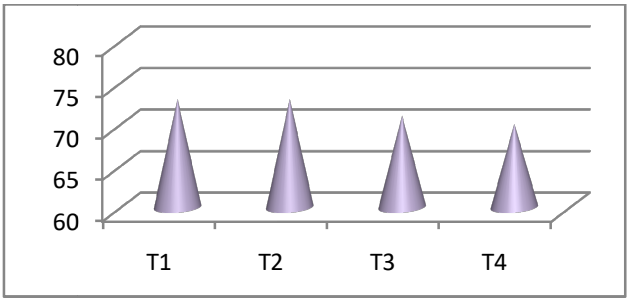

Figure 3: Graphical presentation of flavor and taste

Table 5: Individual Marking For Overall Acceptability

	T1	T2	T3	T4
Member1	8	8	8	7
Member 2	7	7	8	8
Member 3	8	8	7	8
Member 4	7	8	8	7
Member 5	9	8	8	8
Member 6	8	7	7	8
Member 7	9	8	8	7
Member 8	8	8	7	8
Member 9	9	8	8	7
Total	73	70	69	68

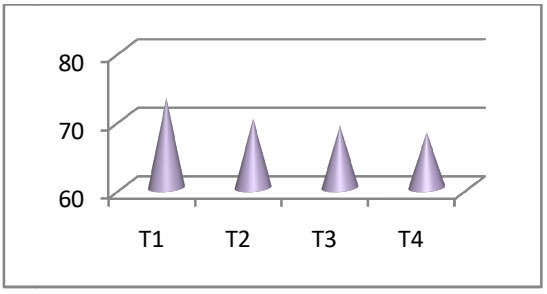

Figure 4: Graphical presentation of overall acceptability

Table 6:- Overall Calculation

Parameter	T1	T2	T3	T4
1	71	70	69	71
2	75	73	70	69
3	73	73	71	70
4	78	77	76	75
Total	297	293	286	285
Average	74.25	73.5	71.5	71.25
Standard Deviation	2.98	2.87	3.1	2.62

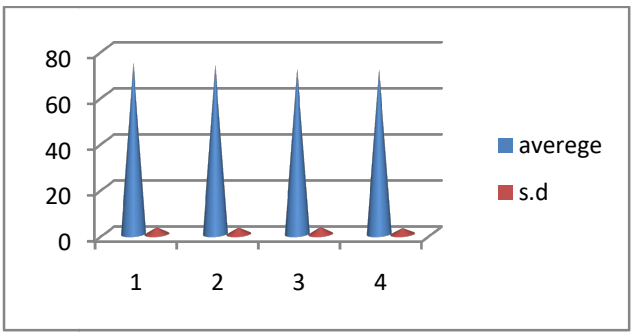

Figure 5: Graphical presentation of standard deviation and average of different concentration.

SUMMARY AND CONCLUSION

The sensory evaluation of the therapeutic premix soup powder blending by wheat germ and mushroom mix product was done by using different concentration like (T1, T2, T3, T4) and also using hedonic scale by a panel of 9 members. The scoring for both the premix soup's were various parameter i.e. body and texture, color and appearance, flavor and taste, overall acceptability. As compared to all 4 concentrations (T1, T2, T3, and T4) people liked to eat T1 concentration of the soup. The secondary packaging was not more different for samples i.e. premix soup to ensure safety, quality and shelf life of the product.

REFERENCE

[1] P. R. Shewry. 2009. Wheat. Department of Plant Sciences.

[2] P. Kumar, RK Yadava, B Gollen, S Kumar. 2011. Nutrition contents and medicinal properties of wheat. Life Sciences 2011)

[3] Z. Zhang, H. Song, Z. Peng, Q. L., J. Ming, G. Zhao. 2012. Charact-erization of stipe and cap powders of mushroom (*Lentinus edodes*) prepared by different grinding methods. Journal of Food Engineering 2012.

[4] H Rathore, S Prasad, S Sharma. 2017. Pharmanutrition. Mushroom nutraceu -ticals for improved nutrition and better human health.

[5] S. Kaur, M. Das. 2015. Nutritional and functional characterization of barley flaxseed based functional dry soup mix, Journal of Food Science and Technology.

[6] Rai M., Tidke, Girish, Wasser, Soloman P. Aug. 2005. Therapeutic potential of mushroom.

[7] P. Chandramouli, V. S. Divya, Bharathi, A. Sivakami, B.

Bharathiraja, J. Jayamuthunagai. 2012. Standardization and Nutritional Analysis of Soup Powder Perspired from *Moringa oleifera, Solanum trilobatum, Centella asiatica,* International Journal of Future Biotechnology.