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Standardization and development of oats based product

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Abstract

The objective of present investigation “standardization and development of oats based product” was to standardize & develop the products using oats & their sensory evaluation. Oat is a perfect blend of balanced nutrients and its fiber content makes it healthy for the intestines. Its daily consumption over weeks lowers LDL (“bad”) and total cholesterol, possibly reducing the risk of heart disease. One type of soluble fiber, beta-glucans, has been proven to lower cholesterol. Oat extract can also be used to soothe skin conditions. Oat grass has been used traditionally for medicinal purposes, including to balance the menstrual cycle, treat dysmenorrhoea and for osteoporosis and urinary tract infections. Developed products of oats were momos, kheer. The organoleptic evaluation of products was done by using (9-Point Hedonic Scale). The result of oats based products for (momos, & kheer) (T1) were best in all treatments in case of all sensory attributes. The highest average score for overall acceptability was found in experimental samples. Developed products were accepted by panel members.

Keywords: LDL, dysmenorrhoea

Introduction

In Samuel Johnson’s dictionary, oats were defined as “eaten by people in Scotland, but fit only for horses in England.” A Scotsman’s report to this is, “That’s why England has such good horses, and Scotsman has such fine men!”

The oat (*Avena sativa*), sometimes called the common oat, is a species of cereals grain grown for its seed, which is known by the same name (usually in the plural, unlike other cereals and pseudocereals). While oats are suitable for human consumption as oatmeal and rolled oats, one of the most common uses is as livestock feed. Oats have numerous uses in foods; most commonly, they are rolled or crushed into oatmeal, or ground into fine oat flour. Oatmeal is chiefly eaten as porridge, but may also be used in a variety of baked goods, such as oatcakes, oatmeal cookies and oat bread. Oats are also an ingredient in many cold cereals, in particular muesli and granola, Oat extract can also be used to soothe skin conditions. Oat grass has been used traditionally for medicinal purposes, including to help balance the menstrual cycle, treat dysmenorrhoea and for osteoporosis and infections. Oats are generally considered healthy due to their rich content of several essential nutrients. In a 100 gram serving, oats provide 389 calories and are an excellent source (20% or more of the Daily Value, DV) of protein (34% DV), dietary fiber (44% DV), several B vitamins and numerous dietary minerals, especially manganese (233% DV). Oats are 66% carbohydrates, including 11% dietary fiber and 4% beta-glucans, 7% fat and 17% protein. The established property of their cholesterol-lowering effects has led to acceptance of oats as a health food.

Oats are excellent source of soluble fiber, pertained in the B vitamins, thiamin, riboflavin and B6. They also provide iron, calcium, magnesium, selenium and phosphorus.

Oat bran is the outer casing of the oat. Its daily consumption over weeks lowers LDL (“bad”) and total cholesterol, possibly reducing the risk of heart disease. One type of soluble fiber, beta-glucans, has been proven to lower cholesterol. After reports of research finding that dietary oats can help lower cholesterol, the United States Food and Drug Administration (FDA) issued a final rule that allows food companies to make health claims on food labels of foods that contain soluble fiber from whole oats (oat bran, oat flour and rolled oats), noting that 3.0 grams of soluble fiber daily from these foods may reduce the risk of heart disease. To qualify for the health claim, the whole oat-containing food must provide at least 0.75 grams of

soluble fiber per serving. Beta-D-glucans, usually referred to as beta-glucans, comprise a class of indigestible polysaccharides widely found in nature in sources such as grains, barley, yeast, bacteria, algae and mushrooms.

Objectives

- To standardized and develop the oats based product.
- Organoleptic evaluation of developed products.

Materials and Method

The present investigation entitled “standardization and development of oats based products” was carried out to standardize oats and its products. The study was conducted in department of food and nutrition, faculty of home science, KNIPSS Sultanpur.

Justified, judicious and scientific methodological consideration is indispensable for any investigation to deduce meaningful interferences concerning the objectives of the study. The study design reflects to the logical manner in which units of the study are assessed and analyzed for the purpose of drawing generalizations. Thus, with the view of available resources, the best procedures for taking correct observation should be first sorted out in a logical manner so that unbiased interference can be drawn. This chapter delineates information pertaining to the research design and methodological steps used for investigation. The research procedure has been distinctly described as under in the following heads:

- 3.1 Procurement of material.
- 3.2 Processing of raw material.
- 3.3 Development of oats based products.
- 3.4 Sensory evaluation.
- 3.5 Statistical analysis.

3.1 Procurement of material

For the present investigation material e.g., oats was purchased from the local market of Sultanpur city. The procuring was done in single a lot to avoid variation compositional differences so that the quality differences should be ruled out.

3.2 Processing of raw material

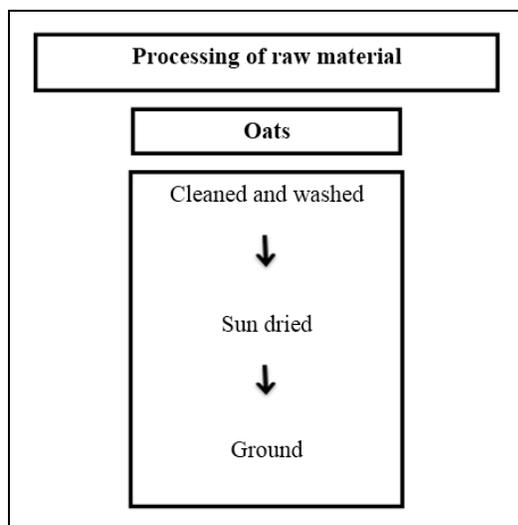


Fig 1: Flow chart of processing of raw material.

3.2.1 Processing of oats

This material was subjected to cleaning, washing and drying in the following manner.

Cleaning and washing

Oats was washed 2 times with tap water and then rinsed with water to remove dirt, dust and other adhering impurity.

Drying

oats was spread on polythene sheet in shade and covered by muslin cloth to protect from foreign particles at room temperature at 27 ± 3 °C for 2-3 days till they become brittle.

Powder making

The dried oats was converted into powder separately through grinder and strained to get uniform powder.

Momos

Ingredients	Amount	
	Controlled	Experimental
Oats powder	-	200g.
Salt	To taste	To taste
Cabbage	20g.	20g.
Shimla mirch	25g.	25g.
Garlic	5g.	5g.
Ginger	10g.	10g.
Green chilly	5g.	5g.
Carrot	10g.	10g.
Radish	10g.	10g.

Method

- Combined the oats powder and a little salt in a deep bowl, mix it well and knead into a soft dough using enough water. Keep aside.
- Grated cabbage, capsicum, garlic, ginger, carrot, radish, green chili and salt in a bowl and mix well. Keep the stuffing aside.
- Divided the dough into 12 equal portions.
- Rolled out a portion of the dough into a 75 mm. (3”) diameter circle using a little oats powder for rolling and place 1 tbsp. of the prepared stuffing in the center of the circle.
- Folded over to make a semi-circle and press the edges lightly with your finger to seal it.
- Bring both the corners of the semi-circle one over the other and again pinch it with your fingers to seal it together.
- Repeated steps 4 to 6 to make 11 more momos.
- Steamed the momos in a steamer for 10 minutes.
- Heated oil and fried baati in a low flame till brown.

B: kheer

Ingredients	Amount	
	Controlled	Experimental
Rolled oats	-	150g.
Brown sugar	15g.	15g.
Cashewnut	10	10
Milk	500g.	500g.
Butter	25g.	25g.
Almond	10	10
Pistachios	20	20
Walnut	5	5
Cardamom	4	4
Water	According to need	1 cup

Method

- Melted the ghee or butter in a kadai or saucepan.
- Added the oats and fried them with cardamom tadka for 4-

5 minutes.

- When they turned brown, removed it from flame.
- Lowered the heat and cooked the milk with dry fruits.
- Added brown sugar.
- After cooking milk add fried oats on it.
- Continue to stirred and cooked till 10 to 12 min.
- Switched off stove.
- Added dry fruits for garnishing.

Result and Discussion

The data were collected on different aspects per plan were tabulated and analyzed statistically. The result from the analysis presented and discussed chapter in the following sequence.

4. Organoleptic evaluation of Oats based products.

4.1. Organoleptic evaluation of oats based products

- Flavor and taste.
- Body and texture.
- Color and appearance.
- Over all acceptability.

Table 4.1.1: Organoleptic evaluation of Momos

Product	Flavor & taste	Body \ texture	Color & appearance	Overall acceptability
T0(controlled)	8.2	8.1	8.9	8.1
T1(experimental)	9	8.9	8.9	8.9

Table 4.1.1. Shows that the experimental (T1) 9, 8.9, 8.9 and 8.9 obtained maximum for flavor & taste, body & texture, color & appearance and overall acceptability; while controlled (T0) obtained 8.2, 8.1, 8.9 and 8.1 for flavor & taste, body & texture, color & appearance and overall acceptability respectively, This indicated that the controlled (To) Momos was found to be fallen under category of “Like Very Much to Like Extremely”.

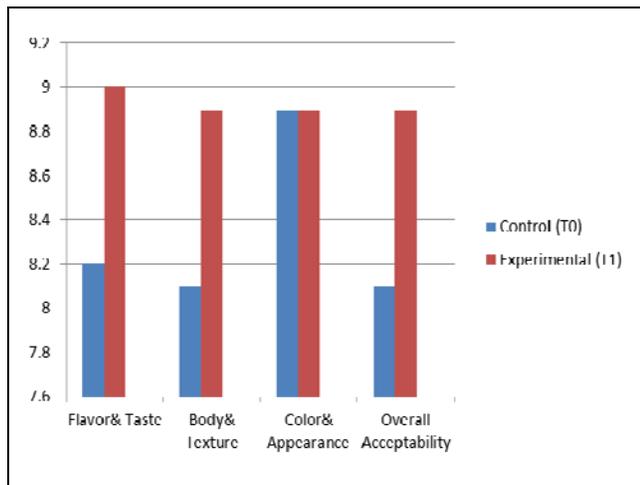


Fig 1: Mean overall acceptability of Momos

Similarly, Vita Sterna, Sanita Zute, Linda Brunava. *et al.*, (2016) studied that oats, as a healthy food containing significant amount of soluble dietetic fiber, beta glucans, fat soluble vitamin E and polyunsaturated fatty acids in the word. There are luck investigations in protein quality and fatty acids composition till now. Therefore the aim of this study was to characterize the biochemical composition of husked and naked oats varieties and breeding lines to grow in Latvian condition. In the studied samples content of protein, fat, vitamin E, same as composition of amino acids, fatty acids and dietary fiber

were determined. Oats grain are rich with biologically significant substance and their consumption in human diet is beneficial for human well-being.

Table 4.1.2. Organoleptic evaluation of Kheer

Product	Flavor & taste	Body \ texture	Color & appearance	Overall acceptability
T0(controlled)	7.8	7.9	8.7	7.8
T1(experimental)	8.7	8.6	8.7	8.6

Table 4.5 shows that the experimental (T1) 8.7, 8.6, 8.7 and 8.6 obtained maximum for flavor & taste, body & texture, color & appearance and overall acceptability; while controlled (T0) obtained 7.8, 7.9, 8.7 and 7.8 for flavor & taste, body & texture, color & appearance and overall acceptability respectively, This indicated that the controlled (To) Kheer was found to be fallen under category of “Like Very Much to Like Extremely”.

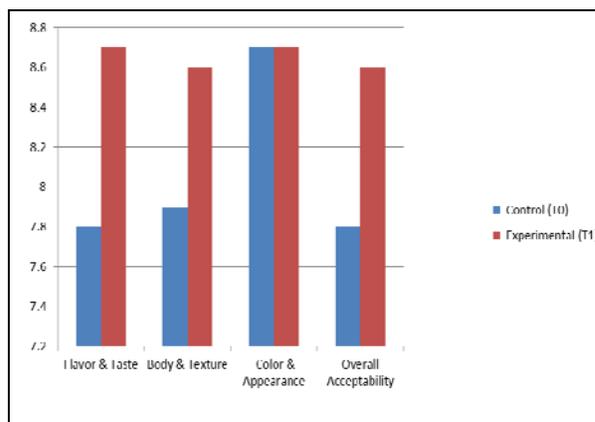


Fig 1: Mean overall acceptability of Kheer

Similarly, Isabel Comino, Maria de Lourdes Moreno, and Carolina Sousa. *et al.*, (2015) reported that, a gluten-free diet is currently the only effective means of treating individuals with celiac disease. Such a diet enables celiac patients to control their symptoms and avoid various complication associated with condition. Oats are included in the list of gluten free ingredients in European regulations, their safety when consumed by celiac patients remains debatable. As a result several studies have shown that the immunogenicity of oats varies depending on cultivar consumed. Thus, it is essential to thoroughly study the variety of oats used in a food ingredient before including it in a gluten-free diet.

Summary and Conclusion

The oat (*Avena sativa*), sometimes called the common oat, is a species of cereals grain grown for its seed, which is known by the same name (usually in the plural, unlike other cereals and pseudocereals). While oats are suitable for human consumption as oatmeal and rolled oats, one of the most common uses is as livestock feed. Oats are also occasionally used in several different drinks. In Britain, they are sometimes used for brewing beer. Oatmeal stout is one variety brewed using a percentage of oats for the wort. The more rarely used oat malt is produced by the Thomas Fawcett & Sons Maltings and was used in the Maclay Oat Malt Stout before Maclays Brewery ceased independent brewing operations. A cold, sweet drink called avena made of ground oats and milk is a popular refreshment throughout Latin America. Oatmeal caudle, made of ale and oatmeal with spices, was a traditional

British drink and a favourite of Oliver Cromwell. Oat extract can also be used to soothe skin conditions. Oat grass has been used traditionally for medicinal purposes, including to help balance the menstrual cycle, treat dysmenorrhoea and for osteoporosis and urinary tract infections Oat bran is the outer casing of the oat. Its daily consumption over weeks lowers LDL ("bad") and total cholesterol, possibly reducing the risk of heart disease. One type of soluble fiber, beta-glucans, has been proven to lower cholesterol.

The present investigation entitled "standardization and development of oats based products" was carried out to standardize oats and its products with two objectives:-

- To standardized and develop oats based the product.
- Organoleptic evaluation of developed products

The experimental work was carried out in the department of Food & Nutrition, Faculty of Home Science, KNIPSS Sultanpur. To standardize and develop the oats based products required different materials like oats, Setuwa, milk, sugar, dry fruits, salt, oil, rice, & etc. were used in the experiment would be purchased from the local market of Sultanpur.

In view of the facts regarding nutritional quality of oats (ICMR, 2010) was made to develop acceptable oats based products. The products were marked as T0 for (controlled) contains no oats and T1 (experimental) contains developed and selected oats.

Conclusion

- Experimental (T1) Momos 9, 8.9, 8.9 and 8.9 obtained maximum for flavor & taste, body & texture, color & appearance and overall acceptability; while controlled (T0) obtained 8.2, 8.9, 8.9 and 8.9 for flavor & taste, body & texture, color & appearance and overall acceptability respectively, This indicated that the controlled (T0) Momos was found to be fallen under category of "Like Very Much to Like Extremely".
- Experimental (T1) kheer 8.7, 8.6, 8.7 and 8.6 obtained maximum for flavor & taste, body & texture, color & appearance and overall acceptability; while controlled (T0) obtained 7.8, 7.9, 8.7 and 7.8 for flavor & taste, body & texture, color & appearance and overall acceptability respectively, This indicated that the controlled (T0) Kheer was found to be fallen under category of "Like Very Much to Like Extremely".

The developed products were given to the panel of 10 judges; products were tested for Flavor & taste, body & texture, color & appearance and overall acceptability. The organoleptic evaluation of products was done by using score card method (9-Point Hedonic Scale). The result of oats based products for Momos, Kheer (T1) were best in all treatments in case of all sensory attributes.

The highest average score for all acceptability was found in experimental products made by developed oats based were mostly accepted by panel member.

Recommendation

- Development bakery products by using oats.
- Nutrient analysis of oats and its products.
- Intervention of oats based products.

Limitations of the Study

- The study is carried out for short period so that time and other resource are limited to an extent.
- The sample size of this study was restricted and area of

study was limited to KNIPSS, Faculty of Home Science Sultanpur.

- It was a sensory evaluation which has responded information with-out any alternative.

Acknowledgement

All glory to the almighty, whose blessing in the success behind this project praise pride and perfection belong to almighty. So first of all I would like to express my deepest sense of gratitude to the omniscient power of the universe, the almighty God.

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It is a rare opportunity and the proud privilege of my life to express my best regard sense of homage and gratitude to my Parents Mr. Om Prakash Tiwari & Mrs. Sunita Tiwari. My family's constant inspiration, everlasting affection, their blessing sacrifices emotion, financial and moral support are the prime fact which made me capable of doing this all.

From the very special corner of my heart I wish to record my indebtedness to my advisor for their kind help and express my manifold thanks to Neha, Ankita. I am also thankful to all panel members for giving me proper co-operation during sensory evaluation.

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