



Optimization of Nutritional and Sensory Properties of Oats, Makhana Dosa Premix

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Abstract:

Healthy and Fiber & Iron rich products is gaining a lot of importance now a days incorporating it with healthy ingredients like Oats, Makhana, Palak, Kalonji, Chia seed, Flex seed, Black gram, Salt.etc. the combination of palak and oats , makhana Dosa Premix seems to be beneficial and also an attractive option .

Study aims around production of a beneficial Dosa Premix made of healthy, ingredients like Oats, Makhana, Palak, Kalonji ,Chia seed , Flex seed ,Black gram , Salt .etc. beans combination can be a centre of attraction and make all age group attracted towards the formulated product .

The Dosa Premix is rich in Protein, and Fiber, Fiber rich product may help to reduced the risk of constipation. and the Protein are helping to developed the muscle concentration. Spinach is rich in Iron , its also good source of iron

Key Words :- Dosa premix, Calcium, Magnesium, Sodium, Potassium, Iron, constipation , Anaemia , Malnutrition patient)

Introduction:

Dosa is a popular South Indian dish made from fermented batter consisting of rice and black gram (also known as Urad dal). They are a staple food in South Indian cuisine, and there are many different variations of Dosa, including masala Dosa (filled with a spiced potato mixture), Rava Dosa (made with semolina instead of rice), and many more. Dosa are known for their crisp texture and tangy flavor, thanks to the fermentation process. They are also a good source of carbohydrates and protein, making them a nutritious and satisfying meal. Dosa have gained popularity worldwide and can now be found in many Indian restaurants around the world.

Dosa is also a great source of healthy carbohydrates. As a result, your body is supplied with the necessary energy that you need to stay energetic throughout the day. So, if you are planning to shed some weight. Dosa has an interesting origin. It was called

"dosha" meaning "sin". Deprived of alcohol, some Brahmin temple cooks thought they could get high on fermented rice. Dosa is a delicious breakfast dish that gives your day a nutritious start.. It can be a good option for weight loss as it is high in protein and fiber. Additionally, the fermentation process used to make Dosa can improve digestion and make it easier for the body to absorb nutrients.

Material and Method:

Oats ,Makhana ,Palak ,Kalonji ,Sabja ,Flex seed ,Black gram ,Salt

Method of Preparation:

Makhana, oats, flex seed, Urad dal, roasted all raw ingredients. Wash the palak properly and give it sundering at least 2-3 days until palak moisture gone. Take dehydrated palak griend it powders in form and also makhana, oats, flex seed, chia seed, and black gram griend it and make a powder in form. Now instant Dosa premix is ready.

Table: Preparation of Treatments Sample

SR.NO	INGREDIENTS	T1	T2	T3
1	Oats	40	40	50
2	Makhana	20	10	10
3	Palak	10	10	10
4	Kalonji	02	02	02
5	Chia seed	03	03	03
6	Flex seed	05	05	05
7	Black gram	20	30	20

Costing Of Preparation of Oats Makhana Dosa Premix (100gm)

Sr.no	Ingredients	Quantity	Price /Quantity	Cost (Rs)
1)	Oats	40 gm	150	6
2)	Makhana	10gm	150	6
3)	Palak	10 gm	30	1.2
4)	Kalonji	2gm	25	1
5)	Chia seed	3gm	25	1
6)	Flex seed	5gm	30	1.2
7)	Black gram	30 gm	50	2
8)	Salt	5gm	20	0.8
9)	Total	480	19.02	

The costing analysis for the treatment product was conducted, taking into account the quantities and price of various ingredients used in

the formulation. The total cost of ingredients for the product was calculated to be RS .19.02

Nutrition Labelling:

NUTRITION FACTS	100 GRAM FORMULATED PRODUCT
Energy , kcal	399.53
CHO, g/100g	61.78
Protein, g/100g	23.68
Fat, g/100g	6.41
Fiber , g/100g	8.08
Calcium, mg/100g	423
Iron , mg/100g	4.07
Potassium, mg/100g	443
Sodium, mg/100g	271

Variation	Appearance Mean \pm SD	Colour Mean \pm SD	Texture Mean \pm SD	Aroma Mean \pm SD	Taste Mean \pm SD	Acceptation Mean \pm SD
T0 (Control)	8.5	9.6	8.3	8.5	8.1	8.3
T1	8.5	8.1	8.5	8.3	8.1	8.5
T2	6.5	6.6	6.5	7	7	6.5
T3	5.1	5.8	5	5.8	5.3	5.1
P value	0.93	0.99	1.21	1.53	1.94	1.42

After analysis of sensory, it was found that T0, T1, T2, T3 has 8.5, 8.5, 6.5 and 5.1 respectively in appearance. In color attribute, T0, T1, T2 and T3 has 9.6, 8.1, 6.6, 5.8 score respectively. In case of texture attribute, it was found that T0, T1, T2 and T3 has 8.3, 8.5, 6.5 and 5 score respectively. In case of aroma, T0, T1, T2 and T3 has 8.5, 8.3, 7 and 5.8

score respectively. In case of taste attribute, T0, T1, T2 and T3 has 8.1, 8.1, 7 and 5.3 score respectively. In case of acceptability attribute, T0, T1, T2 and T3 has 8.3, 8.5, 6.5 and 5.1 score respectively.

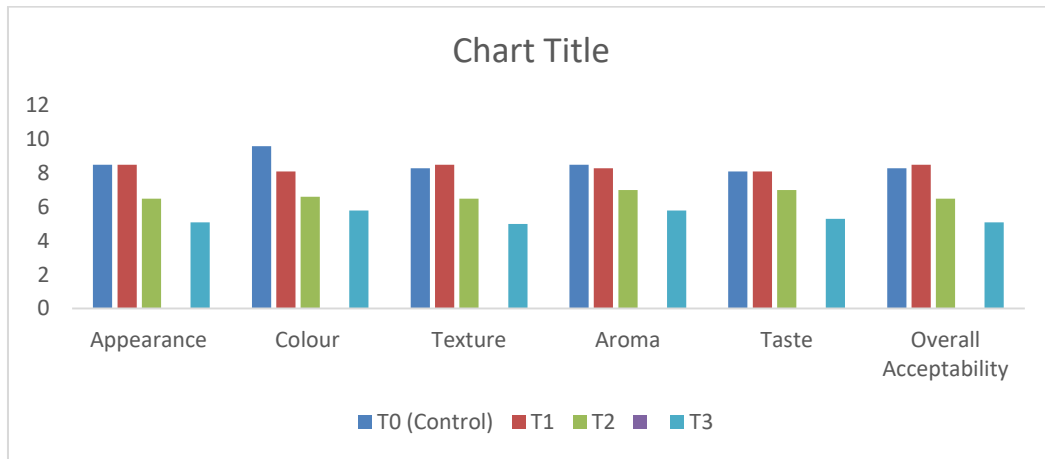


Figure 4.1. Mean Sensory score of value-added instant oats palak dosa premix .

Table 4.2. Nutritive Value of Instant Oats Palak Dosa Premix (per 100 gms)

Variation	Moisture	CHO	Protein	Fat	Ash	Fiber	Ca	K	Na	Fe
Control (T0)	3.19	67.6	9.27	6.6	4.1	4.7	37	165	146	4.0
T1	3.73	61.78	23.68	6.41	4.4	8.08	4.23	443	271	4.07
P Value	1.15	1.24	1.65	1.46	1.32	1.55	1.22	1.64	1.52	1.63

After nutritional analysis, it was found that T0 and T1 has 3.9 % and 3.73 % moisture respectively. After CHO analysis it was found that T0 and T1 has 67.6 % and 61.78 % respectively. After protein analysis it was found that T0 and T1 has 9.27 % and 23.68 % respectively. After fat analysis it was found that T0 and T1 has 6.6 % and 6.41 % respectively. After ash analysis it was found that T0 and T1 has 4.1 % and 4.4 % respectively. After fiber analysis it was found that T0 and T1 has 4.7 % and 8.08 % respectively. After Ca analysis it was found that T0 and T1 has 37 % and 4.23 % respectively. After K analysis it was found that T0 and T1 has 165 and 443 respectively. After Na analysis it was found that T0 and T1 has 146 and

271 respectively. After Fe analysis it was found that T0 and T1 has 4.0 and 4.07 respectively. Natural fermentation was used as a major processing method in this study as it results in a desirable biochemical modification of the food matrix caused by microorganisms and enzymes (Nkhata et al., 2018). It is one of the oldest forms of food processing and preservation technology. It enhances nutrient bioavailability, protein digestibility, essential amino acids, essential fatty acids, and vitamin absorption (Anal, 2019).

Furthermore, fermenting cereals increases their shelf life, sensory properties, and nutritional value.

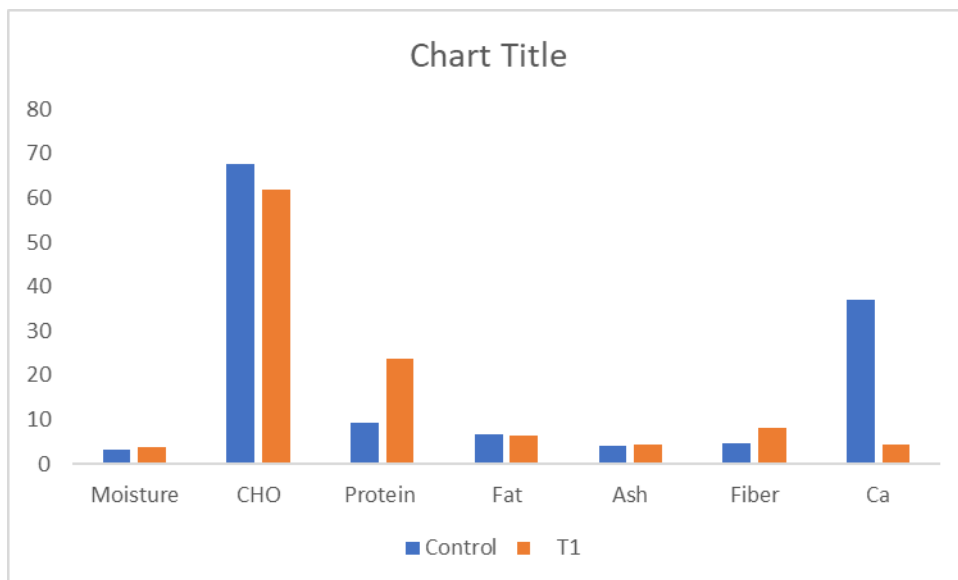
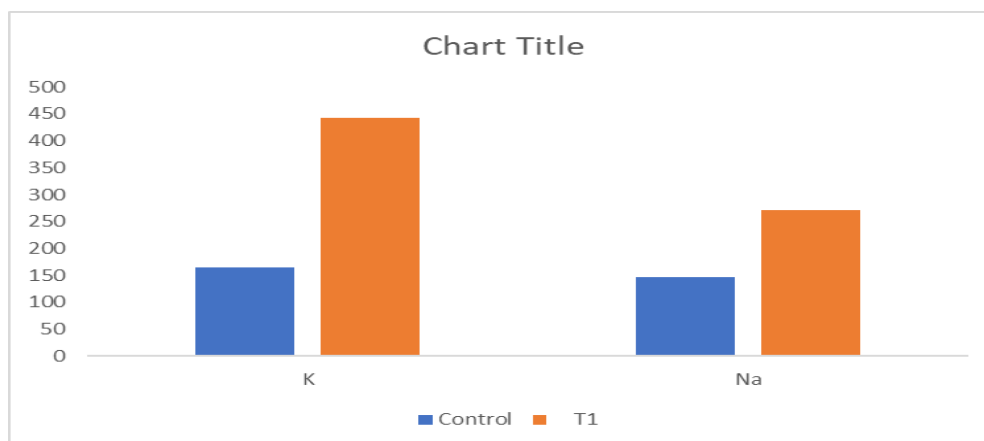
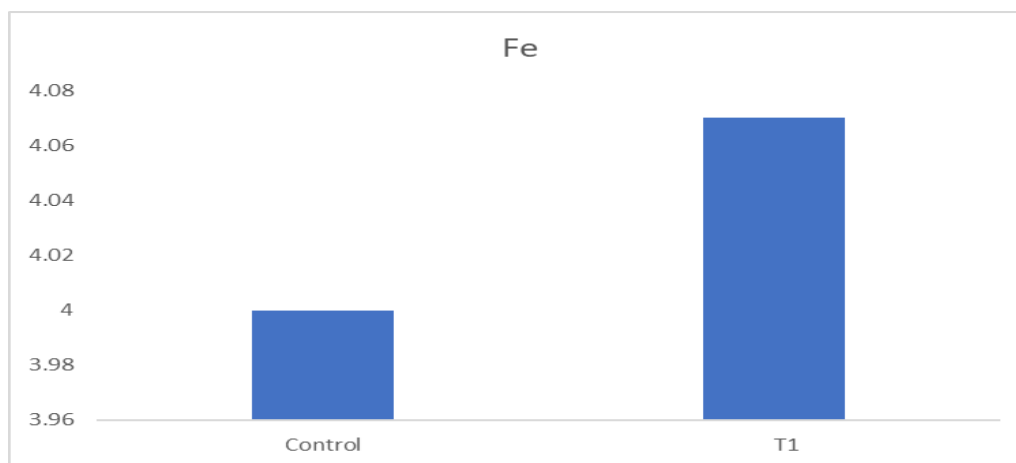


Table 4.2.2 . Chart Title Nutritive Value of Instant Oats Palak Dosa Premix (per 100 gms)**Table 4.2.3 . Nutritive Value of Instant Oats Palak Dosa Premix (per 100 gms)****Table 4.3: Biological microbial testing of sample**

Parameters	Treatments	
	Control	T1
Salmonella	Absent	Absent
TPC	1.3×10^2	1.1×10^2
Yeast and Mould	<10	<10

Table 4.4. Shelf-life study of the premix

Treatment	Day 01 Mean \pm SD	Day 10 Mean \pm SD	Day 20 Mean \pm SD	Day 30 Mean \pm SD	P value
Control	8.4	8.3	8.6	8.8	1.43
T1	8.2	8.6	8.4	8.5	1.25
T2	6.3	6.2	6.0	6.1	1.64
T3	5.0	5.1	4.9	4.7	1.86

Following the storage study, it was discovered that the control group had, on Days 01, 10, 20, and 30, of the storage study, 8.4, 8.3, 8.6, and 8.8, respectively.

Following the storage research, it was discovered that T1 had, on Days 01, 10, 20, and 30, of the storage study, 8.2, 8.6, 8.4, and 8.5. Following the storage investigation, it was

discovered that T2 had, in the following days: 01, 10, 20, 30; 6.3, 6.2, 6.0, and 6.1. Following the storage investigation, it was discovered that T3 had, in the following days: 01, 10, 20, 30; 5.1, 4.9, and 4.7.

Fermentation increases the digestibility of plant proteins (Ali, El-Tinay, & Abdalla, [2003](#); Alka, Neelam, & Shruti, [2012](#); El-Hag et al., [2002](#);

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Pranoto et al., (2013). Plant protein has poor digestibility relative to animal protein. Poor protein digestibility may cause gastrointestinal upset which may result in fecal excretion of protein. Hence, increased protein digestibility could reduce the

levels of undigested proteins which can potentially cause food allergies due to poor absorption in the gut (Untersmayr & Jensen-Jarolim, 2008). Combination of fermentation with other processing methods has more advantages

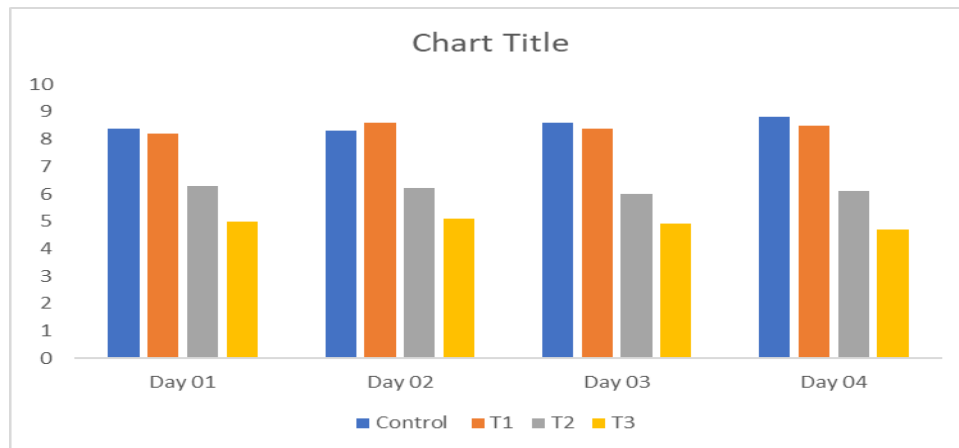


Table 4.4.1. Shelf-life study of the premix

Avenanthramides, which are unique to oats, are powerful antioxidants with high antioxidative activity in humans. Recognizing the nutritional benefits of oats, oat-based fermented food products are gaining popularity as functional foods with high probiotic potential.

Oats have a well-balanced profile of soluble and in-soluble dietary fibers [Adeyemo and Onilude, 2013]. Dietary fibers, also known as roughage, are edible plant parts that are essential components of human nutrition. Dietary fiber enters the large intestine and is partially or completely fermented by gut bacteria [M. Sibtebbas, M. Butt, M.T. Sultan, M.K. Sharif, A. Ahmad, R. Batool (2015) Fermentation produces various types of by-products, including gases and short-chain fatty acids. The combined action of the fermentation process and products contribute to the beneficial effects of dietary fiber on health incorporation of oats has been shown to improve the overall quality of food found that pound cake made with 25% (w/w) oat fiber had better textural characteristics than the conventional product. Bread is an integral part of the daily diet of a large part of the world's population. According to Flander et al.2011, oat-based bread has a mild nutty and pleasant flavor. Because oats retain moisture well, bread stays fresher for longer. Adding oat starch or oat lecithin to wheat bread was found to slow the bread's staling rate. Oat starches and their modified products were organoleptically comparable to the incorporation of oats has been shown to improve the overall quality of food and it was found that pound cake made with 25% (w/w) oat fiber had better textural characteristics than the conventional product. Bread is an integral part of the daily diet of a large part of the world's population. According to, oat-based bread has a mild nutty and pleasant flavor.

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Because oats retain moisture well, bread stays fresher for longer [Flander et al.2011

Conclusion:

In conclusion the oats are climate resilient and nutritionally superior crops. Hence, there is a need to develop value added products from oats and spinach to exploit their nutritional and health benefits. From the present study, it is observed that traditional ready to prepare, acceptable and shelf stable instant dosa mix can be successfully developed. However, such products should be popularized among all sectors of population. Oats while enhancing the taste is also rich in fibre and minerals and thus contributes to the nutritional composition of the trial dosa. The nutritive value of trial dosa was higher compared to control dosa. As discussed earlier the ingredients used in the trial dosa with higher nutritive value resulted in increased nutritional content. It was also seen that the nutritional composition of batter when converted into final product as dosa was not much affected by heat.

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