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DEVELOPMENT OF MULTIGRAIN HERBAL ENERGY CHOCOLATE BAR

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Abstract:
The Multigrain herbal energy chocolate bar have become papular heath conscious individuals who want a quick and convenient snacks. This study devloped a Multigrain herbal energy chocolate bar combining the benefits of Multigrains, herbal energy enhancer and dark Chocolate.Three trials formulation (T0,T1,T2,T3) varied in Multigrain herbal energy chocolate blend, and sweetner composition.sensory evaluation and nutritional analysis relvealed T2 (Protein enhanced)Profile.different formulation.sample (T0 Ragi flour 0%,Rajma 0%,Soya flour 0%, chocolate 60%, coconut powder 25%, sugar 15%)(T1 Soya flour 30%, Ragi flour 10%,Rajma flour 10%, chocolate 25%, Coconut powder 10%, Sugar 15%)(T2 Soya flour 25%,Ragi flour 15%, Rajma flour 10%, Chocolate 30, Coconut powder 10%, Sugar 10 (T3 Soya flour 20%,Ragi flour 20%,Rajma flour 15%, Chocolate 20%, Coconut powder 10%, Sugar 15%).human clinical trials (n=100) demonstrate significant improvement in energy, cognitive, function,and satiefy.The Multigrain herbal energy chocolate bar offers a convenient, health snacks option addressing the growing demand for plant based nutrition and wellness.

Keywords-
Multigrain, herbal energy,formulation, Proximale analysis. Packaging material, storage.

INTRODUCTION:

The world today is increasingly focused on healthy and sustainable food options, and the market for energy bars is no exception. Multigrain energy bars have become popular among health-conscious individuals who want a quick and convenient snack that can keep them energized throughout the day. In recent years, chocolate bars have also gained a reputation for their health benefits when consumed in moderation. Combining these two trends, the multigrain energy chocolate bar has emerged as a promising product in the energy bar market.

This thesis report aims to explore the feasibility and potential benefits of producing and marketing a multigrain energy chocolate bar. The report will delve into the nutritional and health benefits of the ingredients used, the market trends and demand for such a product, and the production and marketing strategies that would be most effective in reaching the target audience. The study will also examine the potential challenges and risks associated with producing a new energy bar product in a competitive market. By the end of this report, we hope to provide insights into the viability of a multigrain energy chocolate

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bar and to identify the key factors that would contribute to its success in the market.

The report discusses the formulation and optimization of the multigrain energy chocolate bar, including the selection of ingredients, processing techniques, and sensory evaluation. The nutritional content of the bar was also analyzed to ensure that it meets the recommended daily intake of essential nutrients.

The findings of this study have practical implications for the food industry and consumers alike, as it provides an alternative to the traditional energy bars that are commonly available in the market. Overall, the multigrain energy chocolate bar has the potential to become a popular and healthy snack option for people of all ages and the The purpose of this thesis report is to provide an in-depth analysis of the multigrain energy chocolate bar, including its nutritional value, production process, and market demand. This report will also explore the potential benefits of consuming multigrain energy chocolate bars regularly and how they can contribute to a healthy lifestyle.

2. Materials and Methods

2.1 Procurement of Raw Material

Raw materials required during present investigation were procured from local market such as Soya flour, Ragi Flour, Rajma Flour, Chocolate ,Seasame seed ,Melon seed, Bengal gram Flour,Coconut , Sugar, Basil leaves Most of the chemicals and equipments used in this investigation were of analytical grade which are obtained from D Y Patil Agriculture And Technical University Talsande, Kolhapur

2.2 Formulation of Multigrain Herbal energy chocolate Bar

The Energy Bar were developed by Soya flour, Ragi flour, Rajma flour, Seasame seed, coconut, chocolate, Melon seed, Bengal gram flour,Basil leaves, sugar with using different formulation. Control Sample T0 (chocolate 60%, coconut powder 25%, sugar 15%)(T1 Soya flour 30%, Ragi flour 10%,Rajma flour 10%,
chocolate 25%,Coconut powder 10%, Sugar 15%)(T2 Soya flour 25%,Ragi flour 15%, Rajma flour 10%, Chocolate 30, Coconut powder 10%, Sugar 10%)(T3 Soya flour 20%,Ragi flour 15%,Rajma 15%, Chocolate 25%, Coconut powder 10%, Sugar15%)(T4 Soya flour 20%,Ragi flour 20%,Ragi flour 15%, Chocolate 20%, Coconut powder 10%, Sugar 15%).

Table 1 : Formulation of multigrain Herbal Energy Chocolate Bar

Ingredients	T0 (%)	T1(%)	T2(%)	T3(%)
Soya Flour	-	30	25	20
Ragi Flour	-	10	15	20
Rajama Flour	-	10	10	15
Chocolate	60	25	30	20
Coconut	25	10	10	10
Sugar	15	15	10	15

2.3 Physical Properties of multigrain Herbal Energy Chocolate Bar

The colour of multigrain Energy Chocolate Bar was determined by visual observations, the length, breadth and width of multigrain Energy Chocolate Bar was measured by vernser calliper The weight analytical weighing balance. of multigrain Herbal

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Energy Chocolate Bar measured On analytical weighing balance

2.4 Chemical Properties of multigrain Herbal Energy Chocolate Bar

Proximate composition such moisture, ash, crade fat, given in ADAL multigrain Herbal Energy Chocolate Bar was determined according to the procedures AOAC (2000) For moisture determination samples were dried in oven aT130 °C for 60 minutes. For ash determination samples were placed in muffled furnace at 550 °C to burn out all carbon compounds leaving in organic part (ash). Fat was determined by Fat extraction unit by using n. Hexane. For fibre determination, samples were treated with 1.25% Sulphuric acid and crude protein and crude fibre of all the Ingredients and Sodium Hydroxide solution. After filtration of digested material it was washed with hot water and then ignited. By calculating loss of weight after ignition, crude fibre contents were determined. Protein contents were determined by using Kjeldahl's unit

2.5 Sensory Evaluation of multigrain Herbal Energy Chocolate Bar

Prepared product were evaluated for sensory characteristics in terms of appearance, colour, flavor, aftertaste, texture and overall acceptability by 10 semi-trained panel members comprised of academic staff members using 9. 0. point Hedonic Judgments were made through rating the product 9 point Hedemic scale with corresponding descriptive terms ranging from 9 like extremely to 1 "dislike extremely. The obtained results were recorded in senry score card.

Flow chart for development of multigrain Herbal Energy Chocolate Bar

Take all flour and sieve it

↓

Roast it well until it golden brown

↓

Make sugar syrup

↓

Add sugar syrup in flour and mix well

↓

Grease the plate with oil

↓

Spread flour mixture on plate

↓

Freeze it for 10 min& cut bar (-16°C)

↓

Make basil syrup with sugar and juice

↓

Pour syrup on mixture and spread it well

↓

Freeze for 10 min (-18°C)

↓

Melt dark chocolate and add melon seeds

Take a grated coconut & sesame seed roast it well

↓

Remove bar and deep it chocolate and cover it well chocolate bar

↓

Garnish it with sesame seed & coconut

↓

Freeze it for 15min(-18°C to-20°C)

↓

multigrain herbal energy rich bar is ready

3. Result And Discussion

Physics Properties And chemical properties Of multigrain Herbal Energy Chocolate Bar

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Tablet 2 Physical properties of multigrain Herbal Energy Chocolate Bar

Parameter	Observation
Colour	Dark Chocolate
Shape	Square
Weight	20 gm
Dimension	5 cm - 6 cm -2.5 cm

Physical properties of multigrain Herbal Energy Chocolate Bar done. Colour and shape done by Visual observation brown colour observed and oval shape detected. Weight of multigrain Herbal Energy Chocolate Bar was 20 gm done by digital weighting balance. The dimension of multigrain Herbal Energy Chocolate Bar was 5 cm x 6 cm x 2.5 cm analysed by Vernier calliper. The product was very crunchy as looking very tempting and taste was super, it was accepted by many consumers.

Table 3 chemical properties of multigrain Herbal Energy Chocolate Bar (T0)

T0	**0 day**	**30 day**	**60 day**
Motsture (%)	11.20	12.23	14.00
Fat(%)	12.74	13.10	9.05
Protein (%)	5.74	5.27	5.15
Ash (%)	2.38	2.57	2.64
Carbohydrates (%)	64.10	63.10	61.20
Energy Kcal	392.94	391.38	389.20
Fiber (%)	1.41	1.57	1.72

Table 4 chemical properties of multigrain Herbal Energy Chocolate Bar (T1)

T1	**0 day**	**30 day**	**60 day**
Motsture (%)	13.30	13.90	14.10
Fat(%)	13.97	13.20	9.10
Protein (%)	5.38	5.14	5.10
Ash (%)	2.42	2.59	2.62
Carbohydrates (%)	63.84	62.20	60.22
Energy Kcal	402.61	387.36	343.18
Fiber (%)	1.47	1.59	1.64

Table 5 chemical properties of multigrain Herbal Energy Chocolate Bar (T2)

T2	**0 day**	**30 day**	**60 day**
Motsture (%)	13.10	13.45	14.05
Fat(%)	13.27	12.80	8.50
Protein (%)	5.49	15.20	5.00
Ash (%)	2.48	2.62	2.72
Carbohydrates (%)	62.72	61.70	60.40
Energy Kcal	392.27	382.8	338.1
Fiber (%)	1.49	1.54	1.62

Table 6 chemical properties of multigrain Herbal Energy Chocolate Bar (T3)

T2	**0 day**	**30 day**	**60 day**
Motsture (%)	12.40	13.20	13.80
Fat(%)	13.10	12.94	9.10
Protein (%)	5.68	5.42	5.22
Ash (%)	2.10	2.27	2.64
Carbohydrates (%)	61.40	60.20	59.50
Energy Kcal	386.22	378.94	340.78
Fiber (%)	1.42	1.58	1.68

Chemical properties of multigrain Herbal Energy Chocolate Bar in above moisture 12.40%, Ash 2.10%, Protein 5.68%, Fat 13.10%, Fiber 1.42%, carbohydrates 61.40% and Energy value was found to be 386.22 kcap respectively.

Mineral

Calcium (Ca)	41 mg
Phosphorus(P)	274 mg
Magnesium (mg)	157 mg
Potassium (k)	512 mg

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Sensory Evaluation Result

Table 7 Sensory Evaluation of multigrain Herbal Energy Chocolate Bar

	T0	T1	T2	T3
Colour	8	7.5	8	8.5
Flavour	7.5	7.5	7.5	8
Test	8	7.5	7.5	8.5
Texture	7.9	7.5	7	8
Appearance	8.5	7.5	7	8.5
Overall Acc.	8.2	7.5	7	9

The color of T3 sample as per table is 8.5 point while sample To (8), Tı (7.5), T3 (8.5). The flavour of sample T3 was acceptable with 8 Point while samples To (7.5), T1 (7.5), T2 (7.5). The taste of sample T3 was selected by 8.5 points while other samples points are To (8), T1 (7.5), T3 (8.5). The texture of sample T3 was selected by 8 points while other samples points are To (7.9), T1 (7.5), T3 (8). The appearance of sample T3 was selected by 8.5 points while other samples To (8.5), Tı (7.5), T3 (8.5). The overall acceptability of sample T3 was selected by 9 points while other samples points are To (8.2), Tı (7.5), T3 (9).according to above table sample T3 more acceptable than other sample and more acceptable to consumer satisfaction.

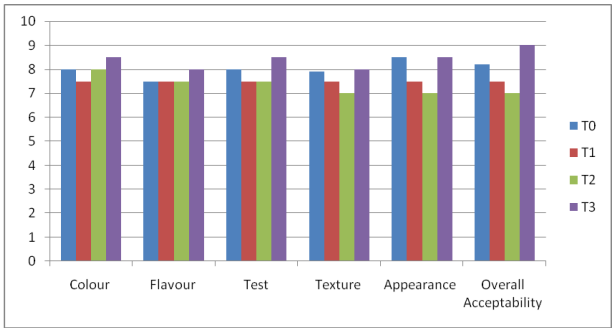

Table 8 Microbial analysis of T0, T1, T2, T3

Media T0	**0th day** $10^{0}10^{1}$	**30 Day**	**60 Day**	**90 Day**
		$10^{0}10^{1}$	$10^{0}10^{1}$	$10^{0}10^{1}$
TPC	NDND	NDND	NDND	NDND
E Coli	Ab	Ab	Ab	Ab
Mold	NDND	NDND	NDND	Ab
		T1		
TPC	NDND	NDND	NDND	NDND
E coli	Ab	Ab	Ab	Ab
Mold	NDND	NDND	NDND	NDND
		T2		
TPC	NDND	NDND	NDND	NDND
E coli	Ab	Ab	Ab	Ab
Mold	NDNd	NDND	NDND	NDND
		T3		
TPC	NDND	NDND	NDND	NDND
E coli	Ab	Ab	Ab	Ab
Mold	NDND	NDND	NDND	NDND

Conclusion

In the present study finally it is concluded that Multigrain herbal energy chocolate bar prepared from different Variations of multigrain Rajma flour,Ragi flour,soya Flour has high Nutrition quality and also its is rich in Protein, carbohydrates and some vital minerals such as calcium and iron in proper amount and has great health benefits. The present investigation carried out for information of multigrain herbal energy chocolate bar in which T3 sample found more superior than sample T1 and T2 so, T3 sample is more acceptable on its sensory attributes.

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