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MULTIGRAIN CANAPE FOR DIABETIC

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ABSTRACT

Multigrain Canapé is snack eaten in one bite for Diabetic individuals. It is basically made from Maida or white bread as the base. The recipe is modified in aspects to improve the fiber and fat content as fiber has shown to decrease the glucose level in the body. Multigrain is used along with spices and functional foods to enhance reduce glucose level. Functional foods such as Ginger powder, Ajwain, soaf and Haldi. A sensory evaluation was conducted after the product was designed and modified by 14 naive panel members and 4 expert panel members using 5 point scale. The product was then standardized. The review of literature was searched to prove the effect of foods incorporated in the modified recipe to show their effects on diabetic individuals.

Keywords: Maida Canapé, Multigrain Canapé and Diabetes.

INTRODUCTION

A *canapé* is a small, prepared and usually decorative food, held in the fingers and often eaten in one bite; therefore they are also referred as finger food. Because they are often served during cocktail hours, it is often desired that a *canapé* be either salty or spicy. Traditionally, *canapés* are built on stale white bread, cut in thin slices and then shaped with a cutter or knife. Shapes might include circles, rings, squares, strips or triangles. These pieces of bread are then prepared by deep frying, sautéing, or toasting. The foods are sometimes highly processed and decoratively applied to the base. As health is a major concern, in our day-to-day life, nutritious and health beneficial products are on high demand. Keeping this in mind, a new innovative idea of making a multi grain canapé was introduced. Multi grain flour is the main ingredient of the recipe. This multi grain flour includes Whole wheat, Soya, Jowar, chana, oats, Maize and Psyllum husk with added flavors such as Soaf, Flax seeds, Chaar magaz, Zeera powder, Dhanya powder, Sunflower seeds, Pumpkin seeds, Oregano and Chili flakes. Functional foods such as Ginger, Haldi and Ajwain are also used.

MATERIALS AND METHOD

DEVELOPING THE FOOD PRODUCT

- Maida flour was replaced with multigrain flour that included jowar flour, soya flour, oats flour, wheat flour, psyllium husk, bajra flour.
- Functional foods like turmeric powder, ajwain, jinger powder, and soaf.

- Soaf and ajwain as appetizer and turmeric powder as it has healing properties.
- Modified food product contains omega 3 and omega 6 rich fatty acid foods such as flax seeds, watermelon seeds, pumpkin seeds and sunflower seeds.

STANDARDIZATION OF THE PRODUCT

METHOD OF PREPARATION

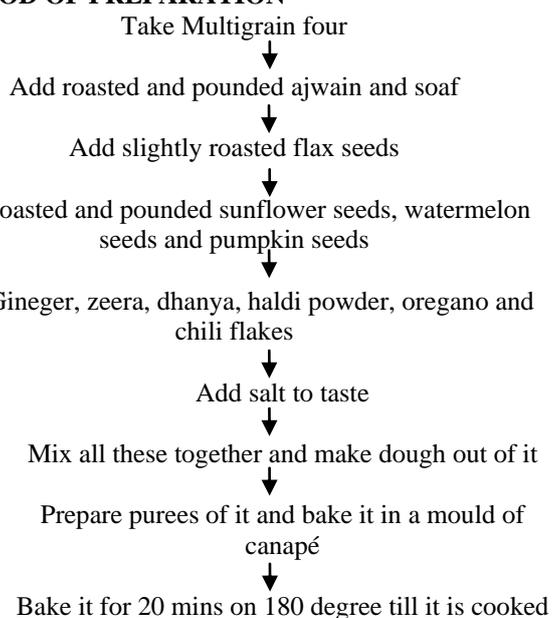




Figure 1 – Multi grain canape

Maida Canape		Multi Grain Canape	
Maida	300 gm	Multi Grain flour	200 gm
Zeera	10 gm	Jowar flour	50 gm
		Soya flour	50 gm
		Ajwain	10 gm
		Soaf	10 gm
		Flax seeds	10 gm
		Chaar magaz	10 gm
		Ginger powder	5 gm
		Zeera powder	5 gm
		Dhanya powder	5 gm
		Haldi	2.5 gm
		Sunflower seeds	10 gm
		Pumpkin seeds	10 gm
		Oregano	10 gm
		Chilli flakes	10 gm
		Salt	To taste

The sensory evaluation was done to standardize the canapé by trained panel members. Scoring Test was used to perform the sensory evaluation. The scores were given according to five point scales for sensory characteristics like Color, Texture, Concept, Taste & After taste.

NUTRITIONAL ANALYSIS

The nutritional evaluation of supplementary foods i.e. moisture content, fat content, protein content, ash content, crude fiber, fatty acid was carried out by A.O.A.C method.

SENSORY EVALUATION OF PRODUCTS

Prepared *Panjiri* were subjected to sensory analysis based on 9-point hedonic scale for color, taste, texture, flavour and overall acceptability using a panel of 10 members who are familiar with the product since childhood. Panel members were advised to use verbal descriptions and convert them into scores. The scores were based on the following criteria: Like extremely: 9; Like

moderately: 7-8; like slightly: 5-6; dislike slightly: 3-4; and dislike extremely: 0-2. The scores were averaged and rounded to the nearest whole number.

EVALUATION OF THE PRODUCT

Sensory evaluation was done to find the acceptability of the product on the basis of ranking scale with the characteristics of color, texture & aroma, concept, taste and after taste. This test was done by 14 naive panel members and 4 expert panel members. The ranks were categorized as 1 – poor, 2 – fair, 3 – good, 4 – very good and 5 – excellent.

STATISTICAL ANALYSIS

The data includes mean scores for each sample as tested by both un-trained and semi-trained panelists. The results of sensory evaluation were split by panelist type and each group was individually subjected to one way analysis of variance (ANOVA) test was used to determine the differences of the mean scores for appearance, smell, taste, consistency, and general acceptability at $P < 0.05$.

RESULTS AND DISCUSSION

The product which was modified keeping Diabetic patients was highly appreciated and accepted not just by diabetic patients but also by healthy subjects. The modified food product increased the Total Dietary fiber, Protein and Essential Fatty acids and lowered the Fat content and Carbohydrate which is essential for Diabetic patients.

TABLE FOR DEVELOPING OF THE FOOD PRODUCT FROM TRADITIONAL RECIPE

The refined flour maida was, modified in order to develop Multigrain canapé as:

1. Maida was replaced by Multigrain flour.
2. Oil was not used for frying instead the canapé was baked.
3. As compared little salt was added to avoid high amount of sodium incorporation.
4. Flour was changed as refined flour is high in simple carbohydrate which is not advisable for Diabetics.
5. Flax seeds, sunflower seeds, watermelon seeds, pumpkin seeds are added as functional foods that provide omega-3 and omega-6 Poly unsaturated fatty acids, necessary to prevent cardiovascular diseases.
6. Soya flour is added as it improves protein quality and quantity but also provides omega-3 polyunsaturated unsaturated fatty acids, vitamins and minerals and lower GI of whole recipe.
7. Ginger powder is also added as the functional food.
8. Oregano, chilly flakes, and other spices are added to increase the palatability of the recipe.

Table 1 - Maida Canape

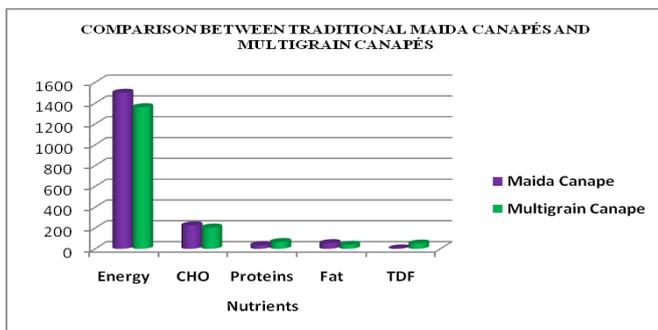
Ingredients	Amount (gm/ml)	Energy (Kcal)	CHO (gm)	Protein (gm)	Fat (gm)	TDF (gm)
Maida	300	1044	221.7	33	2.7	-
Zeera	10	5.6	3.66	1.87	1.5	3
Oil	50	450	-	-	50	-
Total		1099.6	225.36	34.87	54.2	3

Table 2 - Multi Grain Canape

Ingredients	Amount (gm)	Energy (Kcal)	CHO (gm)	Protein (gm)	Fat (gm)	TDF (gm)
Multi Grain flour	200	733	146.6	26.6	6.6	33.3
Jowar flour	50	174.5	36.3	5.2	0.95	4.85
Soya flour	50	216	10.45	21.6	9.75	
Flax seeds	10	54	3	2	3.8	2.74
Watermelon seeds	10	62.8	0.45	3.41	5.26	4.5
Sunflower seeds	10	58	2	2	5.14	0.86
Pumpkin seeds	10	57	1.3	2.7	4.5	0.3
Zeera powder	10	5.6	3.66	1.87	1.5	3
Total		1360.9	203.76	65.38	37.5	49.55

Table 3 - Comparison between Traditional Maida Canapés and Multigrain Canapés

Sr. No	Nutrient	Units	Maida Canape	Multigrain Canape	RDA for Men	RDA for Women
1.	Energy	Kcal	1500	1361	2320	1900
2.	CHO	Gm	225	204	-	-
3.	Proteins	Gm	35	65	60	55
4.	Fat	Gm	54	38	25	20
5.	TDF	Gm	3	50	-	-



STANDARDIZATION OF THE PRODUCT

Multi grain Canapé was made which was similar to the original bread or refined flour canapé. Canape as made from Multigrain which makes it a low GI snack. Along with it, flax seeds, water melon seeds, sunflower seeds and Pumpkin seeds were added. Ginger powder was added as it is an antioxidant. Apart from all this, many spices were added to make the canapé palatable.

Table 4 – standardized product development

Ingredients	Methodology
Multigrain Flour 200 gm	<ul style="list-style-type: none"> Take multigrain flour, add soya and jowar flour to it as well. Add roasted and pounded Ajwain and soaf along with roasted flax seeds.
Soya flour 50 gm	
Jowar flour 50 gm	
Ajwain 10 gm	
Soaf 10 gm	
Flax seeds 10 gm	
Chaar magaz 10 gm	
Pumpkin seeds 10 gm	

Ginger powder 5 gm	<ul style="list-style-type: none"> Add roasted and pounded sunflower, pumpkin, watermelon seeds in the flour. Add ginger, zeera, dhanya, haldi, oregano and chilly flakes and add salt to taste. Mix all these ingredients together a make it into a soft dough. Mould it and make it into a canapé. Bake it for 20 mins on 180 degree till it is cooked.
Zeera powder, dhanya powder, Haldi, Oregano, Chilly flakes, salt.	

RESULT OF SENSORY EVALUATION

The sensory evaluation was done to standardize the canapé by trained panel members. Scoring Test was used to perform the sensory evaluation. The scores were given according to five point scales for sensory characteristics like Color, Texture, Concept, Taste & After taste.

Table 5 – Sensory evaluation

Characteristics	Naïve panel members (average)	Expert Panel members (average)	Out of
Color	4	4	5
Texture and Aroma	4	3.5	5
Concept	4	4	5
Taste	5	4	5
After taste	5	4	5
Total	22	19.5	25
Percentage	85%	75%	100%

Table 6– Sensory evaluation

Characteristics	Naïve panel members (average)	Expert Panel members (average)	Out of
Color	5	5	5
Texture and Aroma	5	5	5
Concept	5	5	5
Taste	5	5	5
After taste	5	5	5
Total	25	25	25
Percentage	100%	100%	100%

DISCUSSION

Fiber (50g) is shown to be beneficial for better glycemic control in Diabetes. (MNT for Diabetes Mellitus and Hypoglycemia of Non diabetes origin, Krauss and Mahan- 11th edition). Oats provide good amount of soluble fiber- Beta-glucan which has a role in lowering cholesterol and thereby risk of CVD and Diabetes. Soybean flour is added to improve the protein quality of the product as well as lower the GI. Flax seeds and pumpkin seeds, watermelon seeds and sunflower seeds are been added as they provide omega-3 and omega-6 fatty acids which are shown to improve lipid levels and reduce the risk of CVD which shows positive effects for diabetes patients. Although traditional recipe is only little higher in fats than modified product but the fats in traditional recipe are more of saturated as it is provided by refined flour but modified product contain fat from flax seeds, watermelon seeds, sunflower seeds and pumpkin seeds which provide omega-3 and omega-6 fatty acids. ROS plays a crucial role in the pathogenesis of diabetes and its complications. The study examined the effects of flax and pumpkin powder seed mixture on alloxan induced diabetes in Wistar rats.

The results suggested that flax and pumpkin seed mixture supplemented to diet may be helpful in preventing diabetic complications in adult rats. (Makni M, 2011). The effects of ingestion of flaxseed gum on blood glucose and cholesterol, particularly low-density lipoprotein cholesterol, in type 2 diabetes were evaluated. Flaxseed gum was incorporated in wheat flour chapattis.

Sixty patients of type 2 diabetes were fed a daily diet for 3 months, along with six wheat flour chapattis containing flaxseed gum (5 g), as per the recommendations of the American Diabetic Association. Results showed a decrease in low-density lipoprotein cholesterol from 110 ± 8 mg/dl to 92 ± 9 mg/dl ($P=0.02$). The study demonstrated the efficacy of flax gum in the blood biochemistry profiles of type 2 diabetes. (Thakur G, et.al). This was a randomized, double-blind, placebo-controlled trial in which 88 participants affected by diabetes were randomly assigned into ginger (GG) and placebo (PG) groups. The GG received 3 one-gram capsules containing ginger powder whereas the PG received 3 one-gram microcrystalline-containing capsules daily for 8 weeks. The study demonstrated that daily consumption of 3 one-gram capsules of ginger powder for 8 weeks is useful for patients with type 2 diabetes due to FBS and HbA1c reduction and improvement of insulin resistance indices such as QUICKI index. (Mozaffari-Khosravi H, et.al, 2014). This study investigated the hypoglycemic and antioxidant effects of Flax and Pumpkin seeds mixture on the kidney of alloxan-induced diabetic rats. Animals were allocated into three groups of six rats each: a control group (CD), a diabetic group (DD) and diabetic rats fed with Flax and Pumpkinseeds mixture (DMS) group. Our results suggest that Flax and Pumpkin seeds mixture supplemented in diet of diabetic rats may be helpful to prevent diabetes and its complications. (Makni M, et.al, 2010).

CONCLUSION

It is a product which can be eaten by all age groups. It has a longer shelf life as it is baked and no oil is used. It is a modified product keeping Diabetic patients in mind and the aim is highly fulfilled. Hence, a healthy and nutritious food product is modified

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