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DEVELOPMENT OF A DESSERT (ECLAIR) MADE UP OF TRAPANATANS AND ZEA MAYS FLOUR WITH TASTE ACCEPTABILITY

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ABSTRACT

The main meal is often concluded by eating a Dessert. This includes sweet foods and beverages such as sweets, milk based preparations such as ice creams, pies, puddings etc., baked cakes and pastries or wines and mocktails. The Desserts have often an important role in meals and people are often fond of eating them. Now the planning of a well plated dessert, there are five characteristics to be considered such as Flavour, Texture, Temperature and visual attractions such as shapes and colors. The muffins are traditionally made from the refined wheat flour, butter and sugar. Mostly desserts are made from point of view of the taste and flavours but the Nutritional composition is not kept in mind. We have developed a Dessert or Muffin from different composition to provide the nutrition as well with taste, flavor and texture. Water chestnut flour and maize flour was used for making of the muffins. These flours are rich in minerals and vitamins. It was found that the water chest nut flour was used as supplements to the diet of people in southern Germany (Karg, 2006). In India this is known by the name of Singhara or paniphal. This fruit is eaten as raw or boiled. After the drying of this fruit this is ground to a flour and called as water chestnut flour. Another flour used to prepare muffins was maize flour. Batters was prepared by mixing 200g flour with a composite mixture of butter, coco powder, castor sugar and vanilla essence all in measured amounts and then were baked. The results thus indicated that the panelists accepted the muffins prepared from different level of water chestnut flour with highest acceptability at 50% water chestnut flour level followed by 60% water chestnut flour level.

KEYWORDS

Society needs healthy snack, Texture, Flavour, Colour and Taste.

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INTRODUCTION

The development of the food product should be accompanied by Flavours. The flavours of different food products complement each other, for example- caramel sauce with grilled fruits or serve complementary benefits. The taste component is another factor which is evaluated very closely to make a recipe successful. The taste factor is combined with texture and temperature to produce a desired food product. For e.g. the crunchy

combination of caramelised sugar with the soft creamy texture of the butter-scotch icecream. This is a contrasting combination. The contrasts are made with the temperature factor also, the perfect example is choco-lava cake where hot chocolate flows inside cold cake. The final food product formed should be visually attractive also. A variety of colours make food attractive and a will of eating is produced. The plate needs to be visually appealing. The food speaks itself when different colours are used such as beet root idli is red whereas cocoa imparts a beautiful brown colour to the black forest icecream¹.

Different countries depicts the word "corn" such as Corn in the United States is called maize. Wheat is known as corn in England and oats in Scotland and Ireland. Corn mentioned in the Bible probably refers to wheat or barley. The asian countries like China it is water- chestnut.

Soft corn is defined as Flour corn (*Zea mays amylacea* Sturt). The appearance of corn possesses a soft endosperm. Kernels are soft and white and blue are most common varieties. The grains are soft, swollen with no breakage or splits. The sweetish taste of corn is due to the mixture of sugar and starch. These are carbohydrates which are found in major quantities. Husk or pod encloses each kernel.

Objective of Study²⁻⁵

The objective of this study is to develop a product and evaluate it based on different criteria and parameters of health with the aim to provide health benefits to individual. The main objective is to provide a proper sweet dessert to diabetics keeping in mind their health conditions and also maintaining a good taste and flavor.

Storage and Processing of Water Chestnut

Chestnut is a type of nut which has low lipid content. The nut pulp contains water more than 50% and porous epicarp, these conditions favour gaseous exchange externally. The storage ability is affected due to less fat content. This makes the nuts prone to decay due to fungi or other microorganisms.

Curing

Hydrotherapy is the modern method to treat water-chestnut. The nuts are dipped in water at room temperature for 4-10 days and then covering them. This is a method of preservation and then drying is

done after curing. Curing is a procedure very effective as it includes putting chestnuts into vitrified tanks, then the damaged nuts float on the top of water. They are then removed from the top and this elimination process is effective in purifying the nuts. Then the nuts are spread in layers of 40-50 cms in aired conditions and also different drying procedures are applied. Drying can be done using forced ventilation.

Thermo-Hydrotherapy

Now comes the sterilisation process of maize. This is done by Thermo- Hydrotherapy process. The nuts are kept in steel cages and then pouring them in baths containing hot water at 50 degrees for 45 mins. Then they are treated with cold water.

Processing of Maize

It is important to understand the processing of maize and the procedures of developing food products from it. Maize is easily available and it can be processed at home as well on large scale levels in Industries. The aim is to convert the raw material into food products. Commercial trade is only possible when the products have greater storage ability or increased shelf life. Other products not having this quality should be consumed immediately or with a label of expiry dates. At home scale Nixtamalized maize, is used to form a ready to eat products which are for immediate consumption. The use of mortar – pestles is very common at home use for the maize flour production. On the other hand when its prepared on industrial levels the more stable and a product having more shelf life is prepared. Due to availability of Machinery, the maize is processed more easily and bulk production is made. The final product of maize have nutritional value which is dependent on vitamins, minerals or anti-nutritional factors as there are many additives or preservatives are added to it. Fortification is the process that is applied to provide the nutrition as there is loss of nutrients always during processing (Wallington, T., J. Anderson, S. Mueller, *et al.*, 2012.)

Health benefits of Maize

Corn is a sweet and tasty kernel which is consumed worldwide. The glucose and starches are energy givers which are abundant in corn kernels.

Phytochemicals are very useful for the body and have benefits against free radicals as well. Phytochemicals provide protection from many diseases as well. The health benefits and researched nutritional value is given below:

Rich source of calories

Corn is a rich source of calories. It contains 86 kcals / 100 gms. The majority composition is of Carbohydrates with 80 % and rest is 11 % fat and 10% proteins. It is cheap and easily available food which is staple diet of many populations and also good source for survival in extreme conditions of famines or drought.

Rich source of vitamins and minerals

Corn is also rich in B-complex vitamins. Thiamine and Niacin are in abundance which are important in many major brain and motor functions. Beri-Beri and Pellagra (4d's) Dermatitis, Diarrhea, Dementia and Death are managed by good dietary intake of Corn. Other vitamins such as Pantothenic acid, Folate is also present in sufficient amounts in corn.

The various minerals such as calcium, phosphorus are also present with magnesium, manganese, zinc, copper and selenium. These all minerals are required by our body for various endocrinal functions. Calcium, phosphorus, Magnesium are necessary for bones development and also controls the secretion of parathyroid and Calcitonin hormones

Antioxidant properties

Phytochemicals and Antioxidants are another class of functional foods which are important for human survival in today's world. Free radicals are produced in the body due to faulty dietary habits as well as intake of processed foods. These are the major cancer causing agents in humans. Cancer is spreading like an epidemic and it has to be controlled by intake of such foods which are rich in antioxidants. Ferulic acid is a phenolic compound present in Corn which has anti-carcinogenic effect and fights off the tumors.

Vitamin-A Content

Beta – carotene is present in corn. This forms Vitamin A in the body. Vitamin A protects mucus membrane which coats all organs of the body, good vision and maintenance of skin. It also builds up immunity and also provides antioxidants to fight the

Cancers, Obesity and Heart Disorders. The lungs also require Vitamin A for their maintenance and working at a normal pace. The corn kernels are rich in almost all nutrients and are very helpful in fighting off the diseases.

METHODOLOGY⁶⁻⁸

Procurement of raw material

Water chestnut flour was purchased from local store in Ghaziabad, Uttar Pradesh, India. The raw materials were physically examined to ensure they were disease-free and then stored in a cool temperature. Maize flour was prepared by purchasing raw maize from local market in Ghaziabad, Uttar Pradesh, India. The maize was milled to obtain corn flour.

Preparation

Blends were prepared by mixing water chestnut flour and maize flour in different combinations. The different ratio of two flour at 40%, 50%, 60% and 70% levels were taken. The appropriate amounts of water chestnut flour and maize flour was weighed using an electronic balance to give the various ratios of the composite flour mixed and stored in airtight containers for use. For the flavour coco powder and vanilla essence was obtained from local market, Ghaziabad, Uttar Pradesh, India. Butter, milk and curd was also obtained from local market, Ghaziabad, Uttar Pradesh, India.

MUFFIN MAKING

Batter Preparation

Batter was prepared by mixing 200g flour with a composite mixture of butter, coco powder, castor sugar and vanilla essence all in measured amount. Mixing of the flour with the butter-batter, was carried out using cut and fold method with the addition of milk cream and curd (2 teaspoon each) until a soft creamy texture is obtained.

Preparation

Muffins were prepared by mixing the batter using cut and fold method and pouring it into a greased muffin mould up till a certain level. The moulds were kept in the oven for 40-45 minutes at 180°C-200°C until golden brown and a toothpick comes out clean. The muffins were removed and kept aside for

cooling for half an hour. For the garnishing, dry fruits or fresh fruits and chocolate syrup can be used. The muffins were kept in refrigerator for the better taste.

Sensory evaluation of Muffins

The sensory quality and overall acceptability of muffin were carried out on a 9 point hedonic rating scale where the samples were rated on the basis of the following criteria: 9-liked extremely, 8-liked very much, 7-liked moderately, 6-liked slightly, 5-neither liked nor disliked, 4-disliked slightly, 3-disliked moderately, 2-disliked very much and 1-disliked extremely. The muffins were cooked and served to 10 trained panelists formed from Department of Dietetics and Applied Nutrition, Amity University Haryana. Panelists evaluated the samples for their colour, flavour, appearance, taste, after taste, texture and overall acceptability. Table No.1. shows the result of the sensory evaluation of the different muffin samples (Figure No.1). The sample containing 50% water chestnut flour and 50% corn flour was significantly rated best (7.8) followed by sample containing 60% water chestnut flour and 40% corn flour (7.3), while sample

containing 70% water chestnut flour and 30% corn flour had the least colour rating (6.5). The taste rating ranged between 5.0 and 7.9. The sample containing 50% water chestnut flour and 50% corn flour had the best taste rating (7.85) followed by 60% water chestnut flour and 40% corn flour (7.3), while sample having 70% water chestnut flour substitution received the least rating (6.5). The effect of water chestnut flour was also found to be significant on other attributes like breakability and softness. The muffins prepared from 50% water chestnut flour addition were soft as compared to other samples. The results showed that as the level of water chestnut flour decreased or increased in comparison to the corn flour (from 30%-60% substitution) the sensory scores for sensory colour, taste, texture and overall acceptability decreased. The results thus indicated that the panelists accepted the muffins prepared from different level of water chestnut flour with highest acceptability at 50% water chestnut flour level followed by 60% water chestnut flour level.

Table No.1: Sensory scores of Muffins

S.No	Parameters	A (40%)	B (50%)	C (60%)	D (70%)
		40:60	50:50	60:40	70:30
1	Appearance	7.15±0.41	7.9±0.53	7.5±0.35	6.51±0.36
2	Colour	6.68±0.36	7.8±0.29	7.31±0.29	6.51±0.35
3	Texture	7.01±0.23	8.01±0.26	7.51±0.23	6.63±0.24
4	Taste	7.08±0.21	7.85±0.46	7.3±0.16	6.5±0.32
5	Flavour	6.9±0.29	7.73±0.21	7.15±0.20	6.8±0.24
6	After taste	7.18±0.23	7.9±0.41	7.55±0.35	6.7±0.17
7	Overall acceptability	6.83±0.16	7.8±0.28	7.33±0.16	6.55±0.36

Mean ± S.D. in a row differ significantly (p<0.05) (n=3)



Figure No.1: Sample b (50% water chestnut flour and 50% maize flour)

CONCLUSION

The need of food product development arises due to the ill-effects of the processed and baked products. The society needs healthy snack development due to Nutritional value of the muffins as the standard recipe includes the use of refined flour, butter and sugar which provides very less nutrients. Therefore after keeping nutritional facts in mind the Maize and Water chestnut flour were used for development of muffins. The sensory evaluation was carried out to ensure the success of the muffins preparation. The panel of experts decided that the flour combination of 50:50 was most acceptable in terms of Appearance, Texture, Flavour, Colour, Taste, After Taste and overall acceptability. The muffins were soft and a new product was developed. The figure of the muffins developed with 50:50 combination is given below:

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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