

A Study on Nutritional Value and Sensory Evaluation of Wheat Gateaux by Addition of Jaggery

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Abstract

The most delightful sweets are prepared with sugar and artificial sweeteners in order to give sweet taste and flavor in the prepared dish or refreshment, these sweeteners used in various forms like granulated, powdered or as a syrup according to the type of food preparation. The refined sugar is rich in carbohydrates especially the sugar obtained from sugarcane and acts as best sweetener for making deserts like gateaux. There are many varieties of gateaux prepared and it is commonly available dessert from generations, an enticing slice of gateaux makes a choice to opt for it. In recent days health has become a primary concern especially with over nutrition which leads to obesity. Although the sugar is considered as a daily commodity in foods, gateaux contains large amount of sugar content, consuming in regular basis may lead to health implications. This study is focused towards the Nutritional Value of jaggery and the usage as a substitute for sugar by incorporating it in the preparation of Gateaux, Lastly to distinguish the sensory evaluation of gateaux made out of jaggery.

Keywords: Jaggery, Gateaux, Cake, Healthy Diet, Nutritional Value.

Introduction

The Jaggery is obtained from sugarcane by reducing the sugarcane juice in an open container or pan. India is the major producer of jaggery in world^[1], even it is considered as an unrefined sugar, the characteristic of Jaggery (Gur) is sweet and has medicinal values due to its nutritional content it is also loaded with natural minerals, nutrients with a value of sucrose as 50% and rich in iron content, that assist in curing anemia and helps in carrying oxygen to blood, Vitamin B6 present in jaggery reduce depression, heart disease and supports in treating disease like Alzheimer, Vitamin D2 of jaggery aid in curing the individuals suffering from hypoparathyroidism^[2], this

vitamin is also helps in curing the people who have the symptoms of rickets, most importantly the vitamin e found in jaggery improves the immune system, as it has lot of medicinal properties it is considered as a good substitute for sugar in making desserts^[3], Jaggery is already used as a normal sweetening agent in traditional food preparation of south India, so as to use jaggery instead of sugar, gateaux are prepared by swapping sugar with jaggery^[4]. The added ingredients for making gateaux are eggs, Wheat flour, shortening along with jaggery. The gateaux prepared with jaggery has similar attributes with an adequate quality identified by a sensory evaluation through experts. The jaggery has its unique flavor and characteristics while cooking as an additional amount of jaggery used in comparison with sugar and a higher amount of sticking temperature is observed^[5].

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Materials and Method

The raw materials are taken for making wheat gateaux are wheat flour, Jaggery, Butter, eggs, Baking powder, and vanilla essence which was purchased from a marketer of provisional products in Chennai,

Tamilnadu, India. The healthy wheat gateaux recipe is formulated with ratios of ingredients and its value. A commercial oven is used to bake the Wheat Gateaux with a cake mould. The Nutritive value of the ingredients are identified by calculating the protein, carbohydrates, vitamin and fat available in the ingredients and a sensory evaluation of wheat gateaux is done by 15 panel judges from school of Hotel and Catering Management of VISTAS using 9 points Hedonic Scale from Like extremely to dislike extremely. There were two sorts of strategy pursued to discover the outcomes in the most precise way. The strategies are nutritional value and sensory assessment technique, the examination is carried on in a food production unit.

Results and Discussion

Nutritional Value of Gateaux prepared with Jaggery: A total number of 1144 calories will be available in a gateaux prepared for 5 to 6 servings with the nutrients and minerals available as mentioned below. Due to the addition of Jaggery with this preparation this dish showing significant nutritional value comparing with sugar. There are many ingredients that contributes the Nutritive value like wheat flour, butter as a shortening, eggs for softness and jaggery as a sweetener, the main reason for swapping refined sugar to jaggery is to have lesser carbohydrates^[6]. The monosaccharide's $C_nH_{2n}O_n$ present in jaggery as single sugar compound whereas the polysaccharides present in refined sugar is a condensed form of sugar^[7].

The purpose of swapping sugar to jaggery and all-purpose flour to wheat flour in gateaux is to have a better nutritional value and healthier comparatively, because jaggery has lot of minerals and nutrients in comparison with sugar^[8], especially the sugar has more carbohydrates in relation with Jaggery which will lead to over nutrition in regular diet, since Jaggery has fructose, sucrose along with minerals and vitamins, it will be a right alternative for refined sugar in the preparation of a gateaux further more to make this dish as more healthier

wheat flour is used instead of all-purpose flour. As the natural sugar sucrose and fructose available in Jaggery 130- 170 grams of sucrose and 20 – 30 grams of fructose will helps in converting in to energy whereas the carbohydrates present in sugar will increase the sugar level in blood. The ingredient like wheat has higher amount of fibre considered as good substitute for all-purpose flour in making deserts^[9], in the preparation of gateaux around 100 grams of wheat flour is used which has 10 - 11 grams of fibre along with that 100 grams of butter is used instead of commercial margarine, butter has saturated fat which contains conjugated linoleic acid (CLA) with antioxidants that have anti-cancer as well as anti-tumor properties. There is an ample amount vitamins available in butter like Vitamin A, E and K. Hence making a gateaux with Jaggery, Butter and Wheat is a best option as it has very good nutritive value.

Table 1. Show the Nutritional Value present in Wheat Gateaux in addition of Jaggery

S. No.	Nutrients and Minerals	Quantity
1.	Sucrose	130 – 170 grams.
2.	Fructose and glucose	20–30 grams.
3.	Iron	22 mg, or 70% of the RDI.
4.	Magnesium	140-180 mg, or 30% of the RDI.
5.	Potassium	1050 mg, or 25% of the RDI.
6.	Manganese	0.4– 1 mg, or 12–24% of the RDI.
7.	Phosphorus	40-180 mg
8.	Protein	4.2 grams.
9.	Fat	0.2 grams
10.	Vitamin A	1183IU
11.	Vitamin B6	0.02 mg
12.	Vitamin D2	14 mg
13.	Vitamin E	222.60 mg
14.	Saturated Fat	62 Grams
15.	Cholesterol	180mg
16.	Fibre	10.7 grams

Preparation Method of Wheat Gateaux

Table 2. Method of Baking Wheat Gateaux

S.No.	Ingredients	Quantity	Procedure	Calories
1.	Jaggery	100gms	Melt and make a syrup out of jaggery	383
2.	Wheat Flour	100gms	Sieve the flour with the baking powder	364
3.	Eggs	2nos	Add the eggs to the butter	156

S.No.	Ingredients	Quantity	Procedure	Calories
4.	Butter	100gms	Cream the butter with the eggs and jaggery syrup	717
5.	Milk	100ml	Add the milk to the egg, jaggery and butter mixture	44
6.	Baking powder	1/2 tea spoon	Add the baking powder and flour mixture to the batter and mix. Pour in into a baking tray and bake	
7	Vanilla Essence	Few Drops	Mix well	
	Total			1664

This wheat gateaux need be prepared with equal amount of wheat flour, butter and jaggery along with eggs, 100 grams of wheat flour is added with baking powder, this flour mixed well and kept separate. A bowl is taken two whole eggs are added whisked well with a whisker 100 grams of butter is added gradually with the mixture and few drops of vanilla essence is added then the little by little jiggery syrup is added later wheat is mixed with mixture gradually in order to avoid lumps, pour the whole mixture in a baking tray and keep it in a preheated oven with a 190° C for 30 minutes, take it out allow it become cool and demould it. This gateaux will have 5 to 6 serving.

Sensory Evaluation: A Sensory evaluation is carried out to evaluate the composition of food by its look, Aroma, smoothness, hotness and palatability^[10]. This study is to identify the quality of product as the new ingredients are added like the incorporation of jaggery and wheat. This product is examined for its sweetness and texture especially to appraise and acquire the response. Around fifteen judges are finalized to evaluate the sensory features of wheat gateaux with satisfactory level of the panel judges, using 9 point hedonic scale extending to know the likes and dislikes on look, smell, consistency, palatability and for an overall acceptance. This evaluation is done in a bright and ventilated area in order to evaluate exactly^[11].

Table 3. Overall Scores through Sensory Evaluation

S.No.	Sensory Attributes	Overall Scores of Judges about Wheat Gateaux	Overall Scores of Judges about Gateaux with Refined Sugar
1	Aroma	7.7	8.1
2	Texture	7.2	9.2
3	Taste	8.5	8.8
4	Look	8.8	9.1
5	Overall Acceptance	8.1	9.1

In table 3. There are various sensory attributes indicates the characteristics of food along with overall hedonic scores of gateaux with jaggery and another one with refined sugar. This analysis was done dependent on the ignored natural sweetener Jaggery to know the importance of using by its nutritive value with a compact method for fusing jaggery into wheat gateaux for a health dish that contains good nutritional source in order to give an happy and healthy life style especially for the individuals who face issues like Putting on weight, hormonal lopsidedness, diabetes and so forth. The aroma got the score 7.7 in jaggery gateaux might be lesser than 8.2 of the gateaux made out of refined sugar was not

showing a phenomenal change and in the part of tastes it was varied with 8.5 – 8.8 having a minute variation of .3.

The fundamental point of the investigation is to substitute the refined sugar which is considerably contains synthetic substances that become a reason for numerous different complexities over the long haul. This investigation on Wheat Gateaux dishes were set up so as to give out examples of it and get the reaction of 15 panel judges in a board who tried this dish and gave their perspectives on it. Physical assessment was the subsequent technique utilized in this investigation where the prepared Wheat gateaux were passed out to

the specialists and were given a sheet which is a tactile score card which had the characteristics which were taste, smell, appearance, aroma and so on.

The outcome got was sure and good towards the examination and the mean scores were brought down in table 3, therefore the scores were got the most noteworthy which was 8.8 for the appearance and 8.5 for taste this is considered as a good remark on the study carried for adding jaggery for making gateaux instead of using refined sugar, along with that wheat flour is substituted for all-purpose flour for a fibre rich food, this results shows 7.2 for its texture and 7.7 to its aroma with an overall acceptance 8.1 out of 10. The wheat gateaux having quality attributes nearer to gateaux prepared with refined sugar and all-purpose flour, the measure of egg and jaggery required was 92% for 100 g of wheat flour. Adding wheat flour and Jaggery in making wheat gateaux will a nutritional food as it is required for a balanced diet.

The general quality score of Wheat Gateaux with jaggery was lower than the Gateaux prepared with refined flour and refined sugar. As this study shows 9.1 as an overall acceptance comparatively higher than the gateaux prepared with Jaggery proves a normal gateaux having better texture and acceptance as a gateaux with jiggery has 7.2 overall score for texture whereas the gateaux made with refined sugar shows the score 9.2. The jaggery syrup had higher sogginess, crumbly stuff and lower absolute sugar when contrasted with refined sugar was the main reason in texture difference. The gelatinization temperature and highpoint consistency of wheat flour were seen to raise with inclusion of jaggery gives rigidness in gateaux.

Conclusion

The Wheat Gateaux made out of jaggery confirmed the little amount of softness, more degree of reddish brown pigmentation and yellowish than in comparison with refined sugar and all-purpose flour gateaux^[12]. The Wheat Gateaux made out of jaggery also had higher sogginess, browning, lower protein, fat and little amount of sugar substance when contrasted with the gateaux with refined sugar and flour. Despite the fact that there was contrast in vapor pressure of the food and acidic values shows variation in terms of storage with the texture attributes, this can be managed by reducing storage time. Nevertheless the quality score for the Wheat Gateaux with jaggery while distinguished with

normal Gateaux with refined sugar, thereisa minimum amount of variance is observed. Thus it is proved very well that Jaggery can be utilized as substitution for refined sugar on equivalent weight In any case, it could be utilized in the advancement of making any deserts^[1]. The dampness substance of wheat gateaux goes far in recommending the time span of usability of the item for shorter duration. But consuming wheat gateaux instead of gateaux prepared with refined sugar will have higher nutritional value with vitamins and nutrients. This will help in safeguarding from diabetes cause by excess of carbohydrates.

Ethical Clearance: Not required for this article.

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