Research Article

Development and evaluation of cereal based sweet products using bael (*Aegle marmelos*) and stevia

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Abstract

Nature has provided us with many medicinal herbs and plants. In the present scenario, scientists and nutritionists are working hard on medicinal plants and natural sweeteners to deal with the increasing incidence of chronic diseases. Therapeutic properties of bael (*aegle marmelos*) can play an important role in avoidance of many diseases. Bael has an untapped prospective for processing as its exceptionally good aroma is not destroyed even during different processing techniques. The increased scientific interest in stevia is due to sweetness and therapeutic properties of its leaf. It is 300 times more sweeter than table sugar and remains undigested and also is not absorbed by the intestine. Stevia remains stable and can tolerate high temperature of cooking and that gives it an edge over other sweeteners. Incorpration of fresh bael fruit pulp and stevia powder in cereal based sweet products like *seviyan* and *dalia* could be popularized among people to gain benefits from these natural plants.

Keywords: bael, stevia, chronic diseases, *seviyan, dalia*

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Introduction

Underutilized, tropical fruits can play a major role in satisfying the need for nutritious and flavoured natural foods of increased therapeutic value. These fruits are usually rich in minerals, vitamins and dietary fiber that can be utilized as an essential constituent of a healthy diet. India's most important ancient remedy is *Aegle marmelos* which has been proven to be a potential drug. *Aegle marmelos*, usually known as bael belongs to family Rutaceae. Due to high potential for processing, the products, thus, prepared from bael would be nutritive and of high therapeutic importance that can be popularized in Indian and international markets [1]. The therapeutically active principle components of bael fruit include marmelosin, umbelliferone and skimmianine (Hiremarh *et al* 1996). The characteristic bael fruit flavor is due to the presence of limonene, a key constituent among these compounds [2].

The overflow of fructose and sucrose in our diets over the past three decades is the reason behind the increasing incidences of chronic conditions like diabetes, hypertension and obesity [3]. So, stevia which is a natural sweeterner can be used to reduce these problems. Stevia sweeteners do not ferment and are acid stable which makes it suitable for use in a large variety of products [4] (Rayaguru and Khan 2008). In near future, stevia is expected to become a major source of high-potency sweetener for the growing natural food market [5]. Toxicological studies have revealed that stevioside does not possess teratogenic, mutagenic, or carcinogenic effects. When used as sweetener, no allergic reactions have been reported by stevia [6]. Supplementation of the standard test meal of twelve type 2 diabetic patients with either 1 g of stevioside or 1 gram of maize starch as control increased the insulinogenic index of the patients by approximately 40 per cent as compared to control. Stevia also reduces post parandial blood glucose levels in type 2 diabetic patients [7].

Materials and Methods

The fresh bael fruit was procured from Regional Research Station, Patiala nad stevia powder was purchased from Ozzy Business consulting Limited, Patiala. The raw material for preparation of and *seviyan* and *dalia* was procured from local market of Ludhiana. The bael fruit free from any damage or infestaition was selected and washed with water. The fruit was then broken by hitting on hard surface and the pulp was scooped out. This pulp was then mixed with eqyal amount of water, blended and then sieved to separate the seeds. The pulp thus obtained was used for product formulation.

Value added cereal based products with bael pulp and stevia

Indian meals are thought to be incomplete without desserts. To satisfy the craving for sweetness in diabetics and people with chronic problems, *seviyan* and *dalia* were prepared using different combination of fresh bael fruit pulp. The product obtained with highest acceptability of beal fruit pulp was then selected for addition of stevia powder and reducing table sugar. Experiments were conducted in food laboratories of Department of Food and Nutrition, college of Home Science, Punjab Agricultural University, Ludhiana.

Seviyan

Seviyan was standardized at two levels:

Standardization-I

Table 1 *Seviyan* using different levels of bael pulp

Ingredients	Seviyan				
	C	B1	B2	B3	B4
Milk (ml)	400	400	400	400	400
Seviyan (g)	100	85	80	75	70
Bael pulp (g)	--	15	20	25	30
Sugar (g)	60	60	60	60	60

C – Control (100% *seviyan*)
B1- 15% bael pulp   B2- 20% bael pulp   **B3- 25% bael pulp**   B4- 30% bael pulp

Standardization-II

Table 2 *Seviyan* using acceptable level of bael pulp and different levels of stevia powder

Ingredients	Seviyan				
	C	BS1	BS2	BS3	BS4
Milk (ml)	400	400	400	400	400
Seviyan (g)	75	75	75	75	75
Bael pulp (g)	25	25	25	25	25
Sugar (g)	60	42	36	30	24
Stevia (mg)	--	90	120	150	180

C – Control (75% seviyan+ 25% bael pulp+ 100% sugar)
BS1- 30% stevia + 70% sugar   BS2-40% stevia +60 % sugar
BS3- 50% stevia + 50% sugar   BS4- 60 % stevia + 40% sugar

The recipe of the product with most acceptable level has been given below:

Ingredients	
Milk	400ml
Seviyan	75 g
Bael pulp	25g
Sugar	30g
Stevia powder	150mg

Method

- *Seviyan* were roasted to a light golden colour.
- Added milk to seviyan and cooked till it thickened.
- Added sugar, bael pulp and stevia powder and cooked for 2-3 minutes.
- Removed from flame and served hot or chilled as desired.

Dalia

Dalia was standardized at two levels:

Standardization-I

Table 3 *Dalia* using different levels of bael pulp

Ingredients	Dalia				
	C	B1	B2	B3	B4
Milk (ml)	300	300	300	300	300
Dalia (g)	100	80	75	70	65
Bael pulp (g)	--	20	25	30	35
Sugar (g)	70	70	70	70	70
C – Control (100% *Dalia*)					
B1- 20% bael pulp　　B2- 25% bael pulp　　　B3- 30% bael pulp　　　B4- 35% bael pulp					

Standardization-II

Table 4 *Dalia* using acceptable level of bael pulp and different levels of stevia powder

Ingredients	Dalia				
	C	BS1	BS2	BS3	BS4
Milk (ml)	300	300	300	300	300
Dalia(g)	70	70	70	70	70
Bael pulp (g)	30	30	30	30	30
Sugar (g)	70	50	40	30	20
Stevia (mg)	--	100	150	200	250
C – Control (75% *dalia*+ 25% bael pulp+100% sugar)					
BS1- 29% stevia + 71% sugar　BS2-43% stevia + 57% sugar					
BS3- 57% stevia + 43% sugar　BS4- 71% stevia + 29% sugar					

The recipe of the product with most acceptable level of bael pulp and stevia powder:

Ingredients	
Milk	300ml
Dalia	70 g
Bael pulp	30g
Sugar	30g
Stevia powder	200mg
Water	200ml

Method

- *Dalia* was roasted to a light golden colour.
- Cooked in pressure cooker with water to one whistle.
- Added milk to it and cooked till it thickened.
- Added sugar, bael pulp and stevia and cooked for 2-3 minutes.
- Removed from flame and served hot or chilled as desired.

Sensory evaluation of the developed value added products

The sensory evaluation of the developed value added products was carried out to select the most acceptable level of bael pulp from the first trial as well as the acceptable level of stevia powder in the development of products in the second trial. In the second trial, the acceptable product of first trial was used as the control sample. The sensory evaluation of the developed products first trial was carried out by ten trained panelists including faculty of department of Food and Nutrition of Punjab Agricultural University while the second trial was evaluated by both the trained panel as well as diabetic panel. The panel was provided with 9 point hedonic scale for attributes like appearance, colour, texture, flavour, taste and overall acceptability (Larmond 1970) (Appendix-I). The highly acceptable products from the second trial containing both bael and stevia with their corresponding control (with no bael and stevia) were weighed, homogenized and oven dried at 60^0C. Dried samples were stored in air tight plastic bags for further proximate analysis using standard [8] methods.

Statistical analysis

Mean and standard error for different parameters were computed. Kruskal Wallis test was used for selecting the best formulations through sensory evaluation. T-test was applied to compare the nutritional parameters between the control and the value added products.

Results and Discussion
Sensory evaluation of cereal based value added products with bael pulp and stevia powder
Seviyan incorporated with bael pulp

Five different treatments of *seviyan* were prepared using *seviyan* and different proportions of bael pulp. C was taken as control which was prepared using *seviyan*. Treatments B1 to B4 were prepared incorporating bael pulp at levels 15, 20, 25 and 30 per cent respectively. B3 (25 per cent bael pulp) scored the highest for all the sensory parameters with an overall acceptability score of 7.74 as shown in **Table 5**. The difference in scores was found to be statistically significant with regard to appearance, flavor and taste while colour and texture were found to be of non significant difference. The mean scores for different sensory parameters of *seviyan* were observed to be highest for BS3 except for texture which was in par with control i.e., 7.6. The scores for taste were higher for C when compared to the score obtained by B3 but the overall acceptability score was significantly higher for B3 (7.74) while for B4 it was 6.88. Hence, *seviyan* of B3 treatment were selected as the final value added product for further standardization with stevia powder.

Table 5 Mean sensory scores for *Seviyan* incorporated with bael pulp

Samples	Parameters					
	Appearance	Colour	Texture	Flavour	Taste	Overall acceptability
C	7.8	7.6	7.6	7.6	7.9	7.7
B1	7.6	7.3	7.2	7.3	7.45	7.37
B2	7.5	7.3	7.3	7.4	7.7	7.44
B3	7.9	7.7	7.6	7.7	7.8	7.74
B4	6.7	6.9	7.1	6.8	6.9	6.88
χ^2	22.458**	12.640^{NS}	6.860^{NS}	13.444**	20.979**	24.270**
** Significant at 1% level of significance (p<0.01); NS - Non significant						
*Significant at 5% level of significance (p<0.05)						
C – Control (100% seviyan), B1- 15% bael pulp, B2- 20% bael pulp, B3- 25% bael pulp, B4- 30% bael pulp						

Seviyan incorporated with bael pulp and stevia powder by semi-trained panel

Five different treatments of *seviyan* were prepared incorporating 25% bael pulp and different levels of stevia powder. The sensory scores given by semi trained panelists for the five treatments are presented in **Table 6** and **Figure 1**. The acceptable *seviyan* incorporated with 25 per cent bael pulp from the first standardization was taken as the Control (C). Further, stevia powder was added to the rest of the treatments at 40, 50, 60 and 70 per cent and was coded as BS1, BS2, BS3 and BS4 treatments respectively. The scores for sensory parameters like texture, flavour and taste were the highest for control (C) with an overall acceptability score of 7.80. The analysis revealed that the sensory scores for appearance, colour, texture, flavour and taste were significantly different for the treatments of *seviyan* incorporated with different levels of stevia powder. With respect to the overall acceptability, BS2 (50 per cent stevia and 50 per cent sugar) scored the highest of 7.7 which was statistically significant when compared to the other treatments. It was followed by BS1 and BS3. BS4 (70% stevia and 30% sugar) received the least scores for of 5.98 for overall acceptability among all the samples.

Seviyan incorporated with bael pulp and stevia powder by diabetics

Five samples were prepared using 25 percent bael pulp and 75 per cent *seviyan* as control and test samples were prepared by incorporating stevia powder at different levels. The mean scores of acceptability trials by ten diabetic judges on nine-point hedonic rating scale are presented in **Table 7**. The results revealed that the highest scores for all the sensory parameters among test samples were obtained by BS2 treatment (50 per cent stevia and 50 per cent sugar). The overall acceptability of BS2 treatment was found to be higher i.e. 7.9 than BS1 i.e., 7.82, for all the parameters followed by BS3 and BS4 i.e. 7.06 and 6.26 respectively. The overall acceptability of control i.e. 7.61 was found to be lower than treatments BS1 and BS2. Statistical results revealed that there was significant difference between the BS2

treatment and control sample for appearance, colour, texture, flavour and taste. The overall acceptability was found to be significantly higher in the BS2 treatment. The scores for taste differed significantly ranged from 6.0-8.05, highest for the BS2 treatment and BS4 with the lowest score. BS2 being the most acceptable product; hence it was further used for analysis.

Table 6 Mean sensory scores for *seviyan* incorporated with bael pulp and stevia powder by semi-trained panel

Samples	Parameters					
	Appearance	Colour	Texture	Flavour	Taste	Overall acceptability
C	7.7	7.75	7.75	7.85	7.95	7.8
BS1	7.7	7.5	7.5	7.4	7.45	7.51
BS2	7.9	7.9	7.6	7.7	7.4	7.7
BS3	6.7	7	6.9	6.5	6.4	6.7
BS4	6.1	6.3	5.9	5.8	5.8	5.98
χ^2	31.182**	25.236**	29.579**	36.548**	35.832**	37.809**

** Significant at 1% level of significance (p<0.01); NS - Non significant
*Significant at 5% level of significance (p<0.05)
C – Control (75% seviyan+ 25% bael pulp+100% sugar), BS1- 40% stevia + 60% sugar,
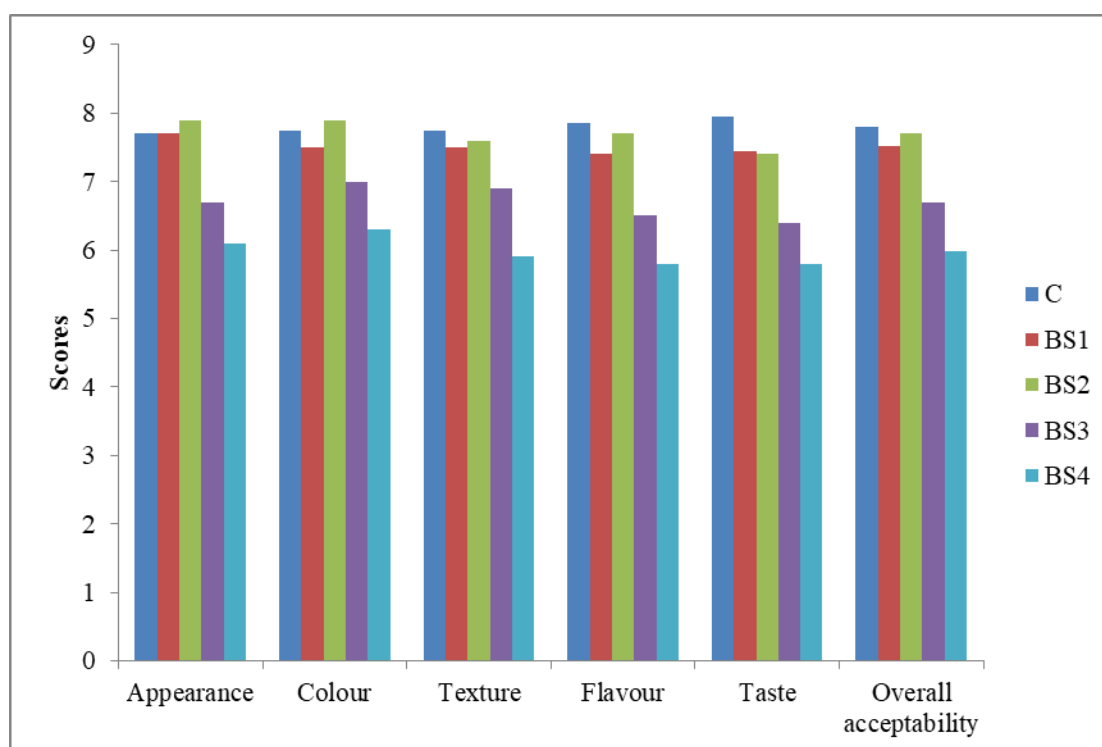BS2-50% stevia + 50% sugar, BS3- 60% stevia + 40% sugar, BS4- 70% stevia + 30% sugar

Figure 1 Mean sensory scores for *seviyan* incorporated with bael pulp and stevia powder by semi-trained panel

Table 7 Mean sensory scores for *seviyan* incorporated with bael pulp and stevia powder by diabetics

Samples	Parameters					
	Appearance	Colour	Texture	Flavour	Taste	Overall acceptability
C	7.8	7.6	7.6	7.5	7.55	7.61
BS1	8	7.9	7.8	7.7	7.7	7.82
BS2	7.8	7.85	7.85	7.95	8.05	7.9
BS3	7.1	7.3	7.1	6.8	7	7.06
BS4	6.5	6.5	6.2	6.1	6	6.26
χ^2	25.518**	20.496**	28.341**	31.660**	27.658**	34.123**

** Significant at 1% level of significance (p<0.01), NS - Non significant
*Significant at 5% level of significance (p<0.05)
C – Control (75% seviyan+ 25% bael pulp+100% sugar), BS1- 40% stevia + 60% sugar, BS2-50% stevia + 50% sugar,
BS3- 60 % stevia + 40% sugar, BS4- 70 % stevia + 30% sugar

Dalia incorporated with bael pulp

Different proportions of bael pulp was added to the broken wheat at levels 20, 25, 30 and 35 percent designated as B1, B2, B3 and B4. The traditional *dalia* was taken as control. The mean scores of acceptability trials for *dalia* by semi trained panel of judges on nine-point hedonic rating scale are presented in **Table 8**. The taste scores for B3 and control were observed to be at par with each other i.e., 7.8 and same was observed for treatment B1 and B2 i.e., 8.0. The highest score for overall acceptability was attained by B3 (8.16), followed by B2 (8.05) and B1 (8.03). Overall acceptability score of control was observed to be significantly lower than all the treated samples except for B4. A significantly higher score of 8.4 for flavour was observed for B3 as compared to other samples. Statistical data revealed that a significant difference exist between all the treatments for flavour, taste and overall acceptability. Statistically non significant difference was observed for appearance, colour and texture among all treatments.

Table 8 Mean sensory scores for *dalia* incorporated with bael pulp

Samples	Parameters					
	Appearance	Colour	Texture	Flavour	Taste	Overall acceptability
C	7.6	8.05	8.25	7.8	7.8	7.9
B1	8	8.2	8.05	7.9	8	8.03
B2	7.9	8.25	8	8.1	8	8.05
B3	8.2	8.3	8.1	8.4	7.8	8.16
B4	7.4	7.55	6.85	6.7	7	7.1
χ^2	12.757^{NS}	9.062^{NS}	12.175^{NS}	20.426**	28.539**	25.640**

** Significant at 1% level of significance (p<0.01), NS - Non significant
*Significant at 5% level of significance (p<0.05)
C – Control (100% dalia), B1- 20% bael pulp, B2- 25% bael pulp, B3- 30% bael pulp, B4- 35% bael pulp

Dalia incorporated with bael pulp and stevia powder by semi-trained panel

Five different treatments of *dalia* were prepared incorporating different levels of stevia powder in the control selected from first standardization. Control (C) was prepared by using broken wheat and bael pulp in the ratio 70:30 respectively. Stevia powder was added to the rest of the treatments at 29, 43, 57 and 71 per cent designated as BS1, BS2, BS3 and BS4. Like all the other products, the best acceptable level of bael pulp in *dalia* was taken as the control for the second standardization using stevia powder. The sensory scores obtained for the five treatments are presented in **Table 9** and **Figure 2**. The statistical analysis revealed that the sensory scores for all the sensory parameters namely appearance, colour, texture, flavor, taste and overall acceptability were significantly different for *dalia* incorporated with different levels of stevia powder. BS3 scored the highest scores for all the sensory parameters with a highest overall acceptability score of 8.05. It was followed by BS2 with the highest score for appearance (8.0), colour (7.90), flavour (7.8) and overall acceptability (7.8). The scores for texture were at par between C and BS2. The sensory scores for all parameters were found to be statistically significant between the treatments BS1 to BS4 and control.

Table 9 Mean sensory scores for *Dalia* incorporated with bael pulp and stevia powder by semi-trained panel

Samples	Parameters					
	Appearance	Colour	Texture	Flavour	Taste	Overall acceptability
C	7.8	7.8	7.6	7.6	7.6	7.68
BS1	7.6	7.4	7.5	7.1	6.5	7.22
BS2	8	7.9	7.6	7.8	7.7	7.8
BS3	7.9	8.2	7.9	8.1	8.15	8.05
BS4	6.9	6.6	6.5	6.3	6.1	6.48
χ^2	15.023**	27.571**	19.801**	31.778**	37.860**	39.741**

** Significant at 1% level of significance (p<0.01), NS - Non significant
*Significant at 5% level of significance (p<0.05)
C – Control (75% dalia +25% bael pulp+100% sugar), BS1- 29% stevia + 71% sugar, BS2-43% stevia + 57% sugar, BS3- 57% stevia + 33% sugar, BS4- 71% stevia + 29% sugar
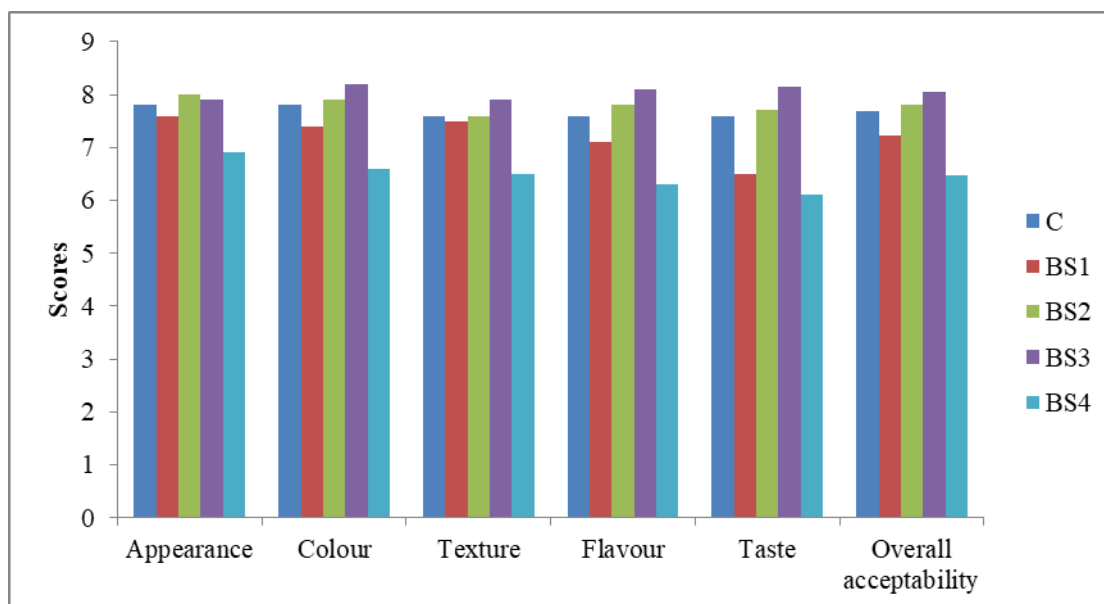
Figure 2 Mean sensory scores for *Dalia* incorporated with bael pulp and stevia powder by semi-trained panel

Dalia incorporated with bael pulp and stevia powder by diabetics

Five samples were prepared using broken wheat and bael pulp i.e. 75 and 25 per cent respectively as control and test samples were prepared by incorporating stevia powder at different levels. The mean scores of acceptability trials by diabetics on nine-point hedonic rating scale are presented in **Table 10**. The results revealed that the highest scores for all the sensory parameters among test samples were obtained by BS3 treatment (57 per cent stevia and 33 per cent sugar). The overall acceptability of BS3 treatment was found to be higher i.e. 8.13 than BS1 and BS2 i.e. 7.86 and 7.91 respectively. The overall acceptability of control i.e. 7.74 was found to be lower than all the treatments except for BS4. Statistical results revealed that there was a non significant difference between the BS3 treatment and control sample for appearance, colour, texture, flavour and taste. The overall acceptability was found to be higher in the BS3 treatment. The mean scores for colour and taste in C and BS1 were at par to each other i.e., 7.7. With respect to appearance, the scores for C and BS2 were at par to each other. The scores for taste ranged between 7.7 to 8.1, the lowest i.e., 7.7 for control and highest 8.1 for BS3.

Table 10 Mean sensory scores for *dalia* incorporated with bael pulp and stevia powder by diabetics

Samples	Parameters					
	Appearance	Colour	Texture	Flavour	Taste	Overall acceptability
C	7.9	7.7	7.7	7.7	7.7	7.74
BS1	7.8	7.7	8.2	7.9	7.7	7.86
BS2	7.9	8.05	7.9	7.75	7.95	7.91
BS3	8.2	8.3	8.05	8	8.1	8.13
BS4	7.7	7.8	7.7	7.6	7.8	7.72
χ^2	3.586 NS	6.579 NS	4.411 NS	1.687 NS	3.583 NS	6.396 NS

** Significant at 1% level of significance ($p<0.01$), NS - Non significant
*Significant at 5% level of significance ($p<0.05$)
C – Control (75% dalia +25% bael pulp+100% sugar), BS1- 29% stevia + 71% sugar, BS2-43% stevia + 57% sugar, BS3- 57 % stevia + 33% sugar, BS4- 71 % stevia + 29% sugar

Nutritional composition of developed products
Seviyan

The proximate composition of C and BS3 of *seviyan* on dry weight basis is given in **Table 11**. For all the parameters of proximate composition the difference between control and test sample was found to be statistically significant except for total ash content.

The moisture content of C and BS2 was 71.19 and 75.62 per cent respectively with a significant difference ($p<0.01$). The crude protein content of control (4.22%) was significantly higher than BS2 i.e. 3.91 ($p<0.05$). A significant decrease in fat content of BS2 (2.99%) was observed as compared to C (16.61) ($p<0.05$). A non significant

increase in each content was observed for BS2 as compared to i.e. is 3.74 (p<0.01). A non significant increase in ash content was observed for BS i.e. 0.85% as compared to 0.82 per cent in C. A significant increase in crude fibre content was observed for BS2 (0.30%) as compared to C (0.23%) (p<0.01) carbohydrate content of BS i.e 16.33% decreased significantly with respect to C i.e 19.81. (p<0.01). A significant decrease in energy content of BS2 i.e. 1.7.90 kcal was observed as compared to C i.e. 129.75 Kcal (p<0.01).

Table 11 Proximate composition of the cereal based developed products (DW basis)

Products	Moisture (%)	Crude Protein (%)	Crude Fat (%)	Total Ash (%)	Crude Fiber (%)	Carbohydrate (%) (by differences)	Energy (Kcal/100g)
Sevyian (control)	71.19±0.46	4.22±0.11	3.74±0.12	0.82±0.1	0.23±0.02	19.81±0.28	129.75±2.44
Acceptable	75.62±0.73	3.91±0.03	2.99±0.07	0.85±0.02	0.30±0.01	16.33±0.67	107.90±3.33
t-value	-5.13**	2.82**	5.20**	-1.47 NS	-2.77*	4.82**	5.30**
Dalia (control)	74.30±0.22	5.03±0.12	2.87±0.06	0.91±0.06	0.24±0.01	16.65±0.36	110.99±2.34
Acceptable	78.02±0.45	4.55±0.22	2.30±0.07	1.13±0.07	0.29±0.01	13.71±0.44	93.93±1.95
t-value	7.38**	1.93 NS	6.39**	2.46 NS	3.50*	5.20**	5.59**

Values are given as Mean±SE*Significant at 5% level of significance (*p*<0.05)
**Significant at 1% level of significance (*p*<0.01)NS- Non significant

Dalia

The proximate composition of C and test sample of *dalia* is presented in Table 11, the moisture content of BS3(78.02%) was observed to be significantly higher than C i.e., 74.30% (p<0.01). The crude protein content of C (5.03%) was non significantly higher than that of BS3 (4.55%). The crude fat content of C (2.87%) was significantly higher than BS3 i.e., 2.30% (p<0.01). Total ash content was significant higher for BS3 as compared to C i.e., 1.13 and 0.91 per cent respectively. Crude fibre content was observed to be lower for C (0.24%) than BS3 (0.29%) but the difference was found to be statistically significant (p<0.05). There was a significant decrease in carbohydrate and energy content of BS3 i.e., 13.71% and 93.93 Kcal as compared to C i.e. 16.65% and 110.99 Kcal respectively. (p<0.01). A significant difference in C and BS3 was observed for all the parameters of proximate composition except for crude protein and total ash.

Mineral Content of Cereal based developed products: As given in **Table 12**, there is an increase in acalcium content in developed products as compared to the control. An increase in potassium content and decreased sodium content was observed in the value added products.
Vitamin C and total Carotene content of cereal based developed products: A low but significantly different increase in vitamin C content of test samples was observed as compared to control as represented in **Table 13**. Carotene content increased in test samples of *seviyan*.

Table 12 Mineral content of Cereal based developed products

Products	Calcium (mg/100g)	Phosphorus (mg/100g)	Iron (mg/100g)	Zinc (mg/100g)	Potassium (mg/100g)	Sodium (mg/100g)
Seviyan (control)	189.99±3.97	84.46±2.31	0.43±0.00	-	105.38±1.15	51.51±0.59
Acceptable	201.80±1.25	83.76±0.49	0.46±0.01	-	156.76±0.86	48.64±0.37
t-value	2.84*	0.30 NS	2.01 NS	-	35.88**	4.13*
Dalia (control)	54.76±2.68	106.04±2.25	1.37±0.05	-	137.26±1.52	33.26±0.50
Acceptable	76.28±0.59	86.19±0.64	1.13±0.03	-	162.73±3.80	31.65±0.19
t-value	7.84**	8.50**	4.25*	-	6.22**	2.98*

Table 13 Vitamin C and total Carotene content of cereal based developed products (DW basis)

Products	Vitamin C (mg)	Carotene (µg)
Seviyan (control)	1.26±0.04	29.41±0.06
Acceptable	2.64±0.17	39.92±0.66
t-value	8.15**	13.73**
Dalea (control)	0.86±0.04	13.63±0.26
Acceptable	1.56±0.03	13.56±0.16
t-value	13.14**	0.22 NS

Conclusion

The *seviyan* and *dalia* were acceptable at 25 and 30 per cent incorporation of bael pulp respectively with 50 an 57 per cent sugar replaced with stevia in both the products. 30 per cent incorporation of bael pulp in *dalia* with stevia and sugar percentage of 57 and 33 gained highest overall acceptability scores. Thirty per cent incorporation of bael, 57 percent stevia and 43 per cent sugar was found to be acceptable in *dalia* by both semi trained and diabetic panel. Mean scores for overall acceptability of *seviyan and dalia,* were found to be significantly different for control and test samples of the developed sweet products.Value added sweet products with highest acceptability were analyzed for proximate composition, minerals, beta carotene and vitamin C content. The fat content of all the test samples decreased as compared to control and this decrease was found to be significantly different for all The crude fibre content of all the test samples increased and energy content of all the test samples decreased with a significant difference. Incorporation of bael pulp in cereal based value added products was found highly acceptable and could be recommended and popularized among people for inclsusion of this underutilized fruit in diet.

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