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# Sensory and Nutritional Evaluation of Sweet Cereal Products Prepared Using Stevia Powder for Diabetics

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**KEYWORDS** Malpura. Mithi Roti. Pinni. Proximate Composition. Sevian. Organoleptic Evaluation.

**ABSRACT** Sweet cereal products namely malpura, mithi roti, pinni and sevian were prepared using stevia powder. Stevia was added at three different levels in the experimental products while sugar was added in the control product. The organoleptic evaluation of the products was done by a panel of judges to select the most acceptable level of stevia in all the products. The products with most acceptable level of stevia and with sugar were analyzed for their proximate composition. It was found that malpura was acceptable at 50mg stevia, mithi roti at 75mg stevia, pinni and sevian were acceptable at 37.5mg stevia as compared to the control recipe. The modified recipe of malpura had 12.13g protein, 3.41g fat, 52.02g carbohydrates and provided 287Kcal of energy. The modified recipe of mithi roti had 10.99g protein, 16.36g fat, 45.72 g carbohydrates and provided 374 Kcal of energy. The modified recipe of pinni had 20.81 g protein, 15.65g fat, 43.75 g carbohydrates and provided 399Kcal of energy. The modified recipe of sevian had 4.42g protein, 5.60g fat, 12.64 g carbohydrates and provided 119Kcal of energy. The percent decrease in calories provided by modified recipe compared to the basic recipe was malpura 25.07%, mithi roti 16.89%, pinni 13.26% and sevian 20.67%. Sweet products using stevia powder are highly acceptable upto 75mg and hence can be safely used by the diabetics to satisfy their craving for sweet foods and are low in calories as compared to the basic recipe.

## INTRODUCTION

Diabetes is fast becoming a leading cause of morbidity, mortality and disability across the world. According to International Diabetes Federation, Diabetes currently affects 246 million people worldwide and India has the largest number of people with diabetes i.e. 40.9 million (IDF 2007). By 2030 there would be 366 million diabetics throughout the world and 79.44 million diabetics in India alone (WHO 2007). It is the fourth leading cause of death by disease and at every ten seconds a person dies from diabetes related causes in the world each year, over three million deaths worldwide are tied directly to diabetes.

In people with strong genetic factor, environmental factors such as excessive intake of food especially sugar acts as precipitating agents. This sugar along with sweetening qualities have also been found to contribute calories, which can lead to obesity, a risk factor for some chronic diseases such as diabetes. Addictive in nature, sugar also leaches important minerals from the body, causing weakness to the immune system. Craving for sweetness lead man to discover several forms of alternative intensive sweeteners, which have made possible to offer consumers sweet taste without the calories (Savita et al. 2004).

Some people switch to artificial sweeteners, but these man made chemicals cause more health problems than they cure. *Stevia rebaudiana* is perennial herb with claimed medicinal and culinary characteristics. It is a plant of daisy family that grows naturally in South America (Geuns 2003). It is not only a 'natural' calorie free product but is 300 times sweeter than sucrose (Kerzicnik et al. 1999). Quality of stevia's sweetness is preferable to that of aspartame or saccharin. It serves as a flavor enhancer and remains stable when combined with acidic foods. High temperature does not destroy its sweetening properties. It neither ferments, not does it discolour. This makes stevia suitable for hot dishes also (Sahelian and Gates 1999). Several studies on diabetic patients showed that use of one gram of stevia daily for a long period reduces the blood glucose level and has no side effects (Hore et al. 2002).

To add variety to the tasteless food and satisfy taste buds of diabetics, a strategy was planned to develop sweet products using stevia. This would help to prevent diabetics from the harmful effects of long-term use of artificial sweeteners. Keeping this in view, the present study was planned to develop and evaluate organoleptically and nutritionally, sweet products prepared using stevia powder for diabetics.

## MATERIALS AND METHODS

Stevia powder in the form of stevi0cal was procured from Indco Hitech Agro Rural Development Women Welfare Society, Ludhiana. Malpura, mithi roti, pinni and sevian were standardized and developed in the laboratory for organoleptic evaluation. In the test recipe, stevia was added at three levels in 100g cooked product while in the control recipe, required amount of sugar was added in 100g cooked product.

Development of Products

***Malpura***- Ingredients- Suji – 20g, Maida – 20g, Wheat flour- 20g, Milk – 65ml, Oil – 2g, Saunf – pinch, Stevi0cal at three different levels 25mg, 50mg, 75mg and 25g sugar in control recipe. Suji, maida, wheat flour, stevi0cal/sugar, milk and saunf were mixed and a batter was made. Batter was spread on a hot ladle and oil was added. Cooked till light brown in colour.

***Mithi Roti***- Ingredients- Wheat flour – 75g, Milk – 60ml, Ghee – 17g, Saunf – pinch, Stevi0cal at three different levels 25mg, 50mg, 75mg and 25g sugar in control recipe. Dissolved stevi0cal/ sugar in milk. Made dough of wheat flour with 15g ghee and milk and also add saunf in it. Made round ball and flattened to make thick chapattis. Cooked on a hot ladle using rest of the ghee.

***Pinni***- Ingredients- Besan – 50g, Khoa - 50g, Cardamom powder- pinch, Stevi0cal at three different levels 37.5mg, 50mg, 75mg and 25g sugar in control recipe. Heated a pan and roasted besan in it till slightly dark in colour. Added khoa to it and roasted for 2 minutes. Removed from flame and added stevi0cal/sugar and cardamom powder. Made small pinnis from it.

***Sevian***- Ingredients- Milk- 150ml, Sevian – 10g, Cardamom powder- pinch, Stevi0cal at three different levels 25mg, 37.5mg, 50mg and 10g sugar in control recipe. Roasted sevian and cooked till soft using water. Boiled milk and added the cooked sevian. Reduced milk till it thickened slightly. Added cardamom powder and stevi0cal/sugar. Cooked for 2 minutes.

### Organoleptic Evaluation

The organoleptic evaluation was done to select the most acceptable level of stevia in all the recipes. The panel of judges including faculty of Department of Food and Nutrition and a few diabetics were provided with score card of Hedonic Rating Scale to score the test samples for their colour, appearance, flavor, texture feel, taste and overall acceptability, compared to the control recipe.

### Nutritional Evaluation

Each recipe with sugar i.e. control and corresponding recipe with acceptable level of stevia was chemically analyzed for their proximate composition i.e. moisture, crude protein, total ash, crude fat, crude fiber, total carbohydrates and energy by standard procedures (AOAC 1990).

### Statistical Analysis

The data on organoleptic evaluation and chemical analysis was analyzed statistically. The percentages, standard error, analysis of variance and their statistical significance was ascertained using a computer programme package (Cheema and Sidhu 2004).

## RESULTS AND DISCUSSION

### Organoleptic Evaluation

***Malpura***- In the trained panel, the scores for flavour ranged from 6.7±0.17 to 8.0±0.0, with the highest for modified recipes with 50mg and 75mg stevi0cal which reveals that they liked it very much. The taste score was highest for 50mg stevi0cal recipe and lowest for 25mg stevi0cal recipe. The most acceptable modified recipe according to the trained panel was recipe with 50mg stevi0cal. It had the overall acceptability score of 7.7±0.17.

According to the scores given by the diabetic panel, the highest score for flavour was for the modified recipe with 50mg stevi0cal i.e. 7.9±0.13. The taste scores ranged from 6.7±0.17 to 7.9±0.13, the highest for the recipe with 50mg stevi0cal. The overall acceptability was highest for the same recipe and lowest for the recipe with 25mg stevi0cal (Table 1). From the scores it can be seen that there was a non- significant difference in the flavor, texture, taste and overall acceptability of malpura. There is no change in the colour and appearance of malpura after addition of stevia. Thus it can be concluded that stevia is most acceptable in malpura at 50 mg.

***Mithi Roti***- In the trained panel, the scores for flavour were highest for the modified recipe with 75mg stevi0cal which reveals that they liked

it very much. The taste score was highest for 75mg stevi0cal recipe. The overall acceptability ranged from 7.3±0.26 to 8.3±0.17. The most acceptable modified recipe according to the trained panel was recipe with 75mg stevi0cal.

According to the scores given by the diabetic panel, the highest score for flavour was for the modified recipes with 75mg stevi0cal i.e. 7.7±0.17. The taste scores was highest for the recipe with 75mg stevi0cal. The overall acceptability was highest for the same recipe and lowest for the recipe with 25mg stevi0cal (Table 2). The non-significant difference in the scores of flavor, texture, taste and overall acceptability shows that stevia can be successfully incorporated in mithi roti, with the most acceptable level of stevia being 75 mg.

***Pinni***- In the trained panel, the scores for flavour ranged from 7.3±0.26 to 8.1±0.13 with the highest for the basic recipe followed by modified recipe with 37.5mg stevi0cal which reveals that they liked it very much. The taste score was highest for the same recipe. The most acceptable modified recipe according to the trained panel was recipe with 37.5mg stevi0cal. It had the overall acceptability score of 7.7±0.17.

According to the scores given by the diabetic panel, the highest score for flavour was for the modified recipe with 50mg stevi0cal. The taste scores ranged from 7.3±0.26 to 8.1±0.13, the highest for the recipes with 50mg stevi0cal. The overall acceptability was highest for the 50mg stevi0cal recipe (Table 3). The scores given by the trained and diabetic panel shows that there is

**Table 1: Organoleptic evaluation of Malpura**

| *S. No.* | *Colour* | *Appearance* | *Flavour* | *Texture* | *Taste* | *Overall acceptability* |
|---|---|---|---|---|---|---|
| *Trained Panel* | | | | | | |
| S1 | 8.0 ± 0.0 | 8.0 ± 0.0 | 6.7 ± 0.17 | 7.7 ± 0.17 | 6.9 ± 0.24 | 6.7 ± 0.17 |
| S2 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.7 ± 0.17 | 7.9 ± 0.13 | 7.7 ± 0.17 | 7.7 ± 0.17 |
| S3 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.7 ± 0.17 | 7.9 ± 0.13 | 7.6 ± 0.19 | 7.6 ± 0.19 |
| S4 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.0 ± 0.0 |
| F-Ratio | $0.00^{NS}$ | $0.00^{NS}$ | $0.95^{NS}$ | $0.75^{NS}$ | $0.96^{NS}$ | $0.94^{NS}$ |
| C.D. at 5% | | | | | | |
| *Diabetics* | | | | | | |
| S1 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.1 ± 0.32 | 8.0 ± 0.0 | 6.7 ± 0.17 | 6.6 ± 0.19 |
| S2 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.9 ± 0.13 | 8.0 ± 0.0 | 7.6 ± 0.19 | 7.8 ± 0.17 |
| S3 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.0 ± 0.29 | 7.4 ± 0.19 | 7.3 ± 0.27 | 6.9 ± 0.24 |
| S4 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.9 ± 0.13 | 8.0 ± 0.0 | 7.9 ± 0.13 | 8.0 ± 0.0 |
| F-Ratio | $0.00^{NS}$ | $0.00^{NS}$ | $1.07^{NS}$ | $0.56^{NS}$ | $0.92^{NS}$ | $0.84^{NS}$ |
| C.D. at 5% | | | | | | |

S1= modified recipe with 25mg stevi0cal, S2= modified recipe with 50mg stevi0cal, S3= modified recipe with 75mg stevi0cal, S4= basic recipe with 25 g sugar, Values are Mean ± S.E.

**Table 2: Organoleptic evaluation of Mithi Roti**

| *S. No.* | *Colour* | *Appearance* | *Flavour* | *Texture* | *Taste* | *Overall acceptability* |
|---|---|---|---|---|---|---|
| *Trained Panel* | | | | | | |
| S1 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.3 ± 0.33 | 7.9 ± 0.13 | 7.6 ± 0.28 | 7.3 ± 0.26 |
| S2 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.7 ± 0.17 | 8.0 ± 0.0 | 7.4 ± 0.19 | 7.6 ± 0.19 |
| S3 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.9 ± 0.13 | 7.9 ± 0.13 | 7.7 ± 0.39 | 7.9 ± 0.13 |
| S4 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.3 ± 0.17 |
| F-Ratio | $0.00^{NS}$ | $0.00^{NS}$ | $0.84^{NS}$ | $0.45^{NS}$ | $1.02^{NS}$ | $1.12^{NS}$ |
| C.D. at 5% | | | | | | |
| *Diabetics* | | | | | | |
| S1 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.3 ± 0.26 | 7.8 ± 0.13 | 7.3 ± 0.26 | 7.0 ± 0.29 |
| S2 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.6 ± 0.17 | 8.0 ± 0.0 | 7.3 ± 0.26 | 7.4 ± 0.19 |
| S3 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.7 ± 0.17 | 8.0 ± 0.0 | 7.9 ± 0.13 | 7.9 ± 0.13 |
| S4 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.3 ± 0.17 | 8.0 ± 0.0 | 8.1 ± 0.13 | 8.1 ± 0.13 |
| F-Ratio | $0.00^{NS}$ | $0.00^{NS}$ | $0.87^{NS}$ | $0.39^{NS}$ | $0.92^{NS}$ | $1.18^{NS}$ |
| C.D. at 5% | | | | | | |

S1= modified recipe with 25mg stevi0cal, S2= modified recipe with 50mg stevi0cal, S3= modified recipe with 75mg stevi0cal, S4= basic recipe with 25 g sugar, Values are Mean ± S.E.

**Table 3: Organoleptic evaluation of Pinni**

| *S. No.* | *Colour* | *Appearance* | *Flavour* | *Texture* | *Taste* | *Overall acceptability* |
|---|---|---|---|---|---|---|
| *Trained Panel* | | | | | | |
| S1 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.8 ± 0.13 | 8.0 ± 0.0 | 7.7 ± 0.17 | 7.7 ± 0.17 |
| S2 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.6 ± 0.19 | 7.9 ± 0.13 | 7.6 ± 0.19 | 7.6 ± 0.19 |
| S3 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.3 ± 0.26 | 7.9 ± 0.13 | 7.3 ± 0.26 | 7.3 ± 0.26 |
| S4 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.1 ± 0.13 | 8.0 ± 0.0 | 8.1 ± 0.13 | 8.1 ± 0.13 |
| F-Ratio | 0.00$^{NS}$ | 0.00$^{NS}$ | 0.98$^{NS}$ | 0.45$^{NS}$ | 0.79$^{NS}$ | 0.79$^{NS}$ |
| C.D. at 5% | | | | | | |
| *Diabetics* | | | | | | |
| S1 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.6 ± 0.19 | 7.7 ± 0.17 | 7.3 ± 0.26 | 7.0 ± 0.29 |
| S2 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.7 ± 0.17 | 8.0 ± 0.0 | 7.3 ± 0.26 | 7.4 ± 0.19 |
| S3 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.4 ± 0.28 | 8.0 ± 0.0 | 7.0 ± 0.34 | 6.9 ± 0.31 |
| S4 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.3 ± 0.17 | 8.0 ± 0.0 | 8.1 ± 0.13 | 8.1 ± 0.13 |
| F-Ratio | 0.00$^{NS}$ | 0.00$^{NS}$ | 0.99$^{NS}$ | 0.25$^{NS}$ | 1.02$^{NS}$ | 1.26$^{NS}$ |
| C.D. at 5% | | | | | | |

S1= modified recipe with 37.5mg stevi0cal, S2= modified recipe with 50mg stevi0cal, S3= modified recipe with 75mg stevi0cal, S4= basic recipe with 25g sugar, Values are Mean ± S.E.

a non- significant difference in the sensory characteristics of pinni with stevia and sugar. Stevia is equally acceptable as sugar at a level upto 50 mg in pinni.

***Sevian***- In the trained panel, the scores for flavour ranged from 7.4±0.28 to 8.0±0.0 with the highest for the basic recipe followed by the modified recipe with 37.5mg stevi0cal which reveals that they liked it very much. The taste score was highest for 37.5mg stevi0cal recipe which was liked very much and lowest for 25mg stevi0cal recipe. The overall acceptability ranged from 6.6±0.28 to 7.9±0.13. The most acceptable modified recipe according to the trained panel was recipe with 37.5mg stevi0cal. It had the overall acceptability score of 7.7±0.17.

According to the scores given by the diabetic panel, the highest score for flavour was for the modified recipe with 37.5mg stevi0cal i.e. 7.9±0.13. The taste scores ranged from 6.7±0.17 to 7.9±0.13, the highest for the recipe with 37.5mg stevi0cal. The overall acceptability was highest for the same recipe and lowest for the recipe with 25mg stevi0cal. Both the panels gave the highest overall acceptability scores to the modified recipe with 37.5mg stevi0cal (Table 4). The Table 4 reveals that there is a non-significant difference in the scores of flavor, taste and overall acceptability of sevian with sugar and with stevia. Stevia is as good in taste as sugar in sevian at a level of 37.5 mg.

Hence the acceptable level of stevia in *malpura* was 50 mg, *mithi roti* 75 mg, *pinni* 50 mg

**Table 4: Organoleptic Evaluation of Sevian**

| *S. No.* | *Colour* | *Appearance* | *Flavour* | *Texture* | *Taste* | *Overall acceptability* |
|---|---|---|---|---|---|---|
| *Trained Panel* | | | | | | |
| S1 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.4 ± 0.28 | 7.8 ± 0.13 | 6.6 ± 0.28 | 6.6 ± 0.28 |
| S2 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.9 ± 0.13 | 7.9 ± 0.13 | 7.7 ± 0.17 | 7.7 ± 0.17 |
| S3 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.6 ± 0.19 | 7.9 ± 0.13 | 7.0 ± 0.20 | 6.9 ± 0.24 |
| S4 | 8.0 ± 0.0 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.9 ± 0.13 | 7.9 ± 0.13 | 7.9 ± 0.13 |
| F-Ratio | 0.00$^{NS}$ | 0.00$^{NS}$ | 0.86$^{NS}$ | 0.35$^{NS}$ | 0.75$^{NS}$ | 0.72$^{NS}$ |
| C.D. at 5% | | | | | | |
| *Diabetics* | | | | | | |
| S1 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.1 ± 0.32 | 8.0 ± 0.0 | 6.7 ± 0.17 | 6.6 ± 0.19 |
| S2 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.9 ± 0.13 | 8.0 ± 0.0 | 7.8 ± 0.19 | 7.8 ± 0.15 |
| S3 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.0 ± 0.29 | 7.4 ± 0.19 | 7.3 ± 0.27 | 6.9 ± 0.24 |
| S4 | 8.0 ± 0.0 | 8.0 ± 0.0 | 7.9 ± 0.13 | 8.0 ± 0.0 | 7.9 ± 0.13 | 8.0 ± 0.0 |
| F-Ratio | 0.00$^{NS}$ | 0.00$^{NS}$ | 1.03$^{NS}$ | 0.56$^{NS}$ | 0.93$^{NS}$ | 00.84$^{NS}$ |
| C.D. at 5% | | | | | | |

S1= modified recipe with 25mg stevi0cal, S2= modified recipe with 37.5mg stevi0cal, S3= modified recipe with 50mg stevi0cal, S4= basic recipe with 10 g sugar, Values are Mean ± S.E.

and *sevian* 37.5 mg (Table 5). Savita et al. (2004) also reported that besan laddu was acceptable with 50 mg stevia.

**Table 5: Acceptable levels of stevi0cal in the developed sweet cereal products**

| *Recipe* | *Acceptable level* | | | |
|---|---|---|---|---|
| | *Trained panel* | | *Diabetic panel* | |
| | *mg/100g* | *%* | *mg/100g* | *%* |
| Malpura | 50 | .5 | 50 | .5 |
| Mithi roti | 75 | .75 | 75 | .75 |
| Pinni | 37.5 | .375 | 50 | .5 |
| Sevian | 37.5 | .375 | 37.5 | .375 |

## Nutritional Evaluation

The proximate composition values for the basic and the acceptable recipe were calculated for 100g cooked product, which have been given in Table 6.

The modified recipe of *malpura* with the most acceptable level of stevi0cal had 31.19g of moisture, 12.13g of protein, 3.41g of fat, 0.15g of fibre, 1.10g ash, 52.02g of carbohydrates and provided 287Kcal of energy. While the basic recipe had 7.44g of moisture, 11.98g of protein, 3.34g of fat, 0.13g of fibre, 0.9g ash, 76.21g of carbohydrates and provided 383Kcal of energy.

The modified recipe of *mithi roti* with the most acceptable level of stevi0cal had 25.27g of moisture, 10.99g of protein, 16.36g of fat, 0.91g of fibre, 1.75g ash, 45.72 g of carbohydrates and provided 374 Kcal of energy. While the basic recipe had 7.94g of moisture, 10.35g of protein, 15.94g of fat, 0.53g of fibre, 0.63g ash, 64.61g of carbohydrates and provided 450 Kcal of energy.

The modified recipe of *pinni* with the most acceptable level of stevi0cal had 17.48 g of moisture, 20.81 g of protein, 15.65g of fat, 0.59g of fibre, 1.72g ash, 43.75 g of carbohydrates and provided 399Kcal of energy. While the basic recipe had 1.76g of moisture, 19.54g of protein, 14.75 g of fat, 0.23g of fibre, 1.56g ash, 62.16 g of carbohydrates and provided 460 Kcal of energy.

The modified recipe of *sevian* with the most acceptable level of stevi0cal had 76.12g of moisture, 4.42g of protein, 5.60g of fat, 0.27g of fibre, 0.95g of ash, 12.64g of carbohydrates and provided 119Kcal of energy. While the basic recipe had 67.74g of moisture, 4.24g of protein, 4.98g of fat, 0.22g of fibre, 0.84g of ash, 21.98g of carbohydrates and provided 150 Kcal of energy.

*Malpura* with sugar provided 383Kcal while *malpura* with stevia provide 287Kcal. There was a decrease of 96Kcal in the modified recipe which is 25.07%. *Mithi-roti* with sugar provided 450Kcal while *mithi-roti* with stevia provided 374 Kcal. There was a decrease of 76Kcal in the modified recipe which is 16.89%. *Pinni* with sugar provided 460 Kcal while *pinni* with stevia provided 399Kcal. There was a decrease of 61Kcal in the modified recipe which is 13.26%. *Sevian* with sugar provided 150 Kcal while *sevian* with stevia provided 119Kcal. There was a decrease of 31Kcal in the modified recipe which is 20.67% (Table 7). The data in Tables 6 and 7 reveals that addition of stevia in place of sugar in sweet preparations brings a significant decrease in the caloric content of malpura, mithi roti, pinni and sevian, without

**Table 7: Energy contribution by the developed sweet cereal products**

| *Recipe* | *Energy (Kcal)* | | *Difference* | |
|---|---|---|---|---|
| | *Basic* | *Modified* | *Kcal* | *%* |
| Malpura | 383 | 287 | 96 | 25.07 |
| Mithi roti | 450 | 374 | 76 | 16.89 |
| Pinni | 460 | 399 | 61 | 13.26 |
| Sevian | 150 | 119 | 31 | 20.67 |

**Table 6: Proximate composition of the cooked sweet cereal products (g/100g)**

| *Recipe* | *Moisture(g)* | *Protein(g)* | *Fat(g)* | *Fibre(g)* | *Ash(g)* | *CHO(g)* | *Energy (Kcal)* |
|---|---|---|---|---|---|---|---|
| *Malpura* | | | | | | | |
| S1 | 31.19 | 12.13 | 3.41 | 0.15 | 1.10 | 52.02 | 287 |
| S2 | 7.44 | 11.98 | 3.34 | 0.13 | 0.90 | 76.21 | 383 |
| *Mithi Roti* | | | | | | | |
| S1 | 25.27 | 10.99 | 16.36 | 0.91 | 1.75 | 45.72 | 374 |
| S2 | 7.94 | 10.35 | 15.94 | 0.53 | 0.63 | 64.61 | 450 |
| *Pinni* | | | | | | | |
| S1 | 17.48 | 20.81 | 15.65 | 0.59 | 1.72 | 43.75 | 399 |
| S2 | 1.76 | 19.54 | 14.75 | 0.23 | 1.56 | 62.16 | 460 |
| *Sevian* | | | | | | | |
| S1 | 76.12 | 4.42 | 5.60 | 0.27 | 0.95 | 12.64 | 119 |
| S2 | 67.74 | 4.24 | 4.98 | 0.22 | 0.84 | 21.98 | 150 |

S1 –recipe with the most acceptable level of stevi0cal, S2- basic recipe with sugar

bringing change in its overall acceptability. Thus sweet preparations with stevia can be consumed by diabetics as they are considerably low in calories as compared to the same preparation with sugar.

## CONCLUSION

Stevia can be successfully incorporated upto 75mg in place of sugar in the sweet cereal preparations and provides a good taste. The modified recipes were found to be quite acceptable by the trained panel and the diabetic panel as well. The modified recipes with stevia had significantly lower calories. The percent decrease in calories provided by modified recipe compared to the basic recipe was *malpura* 25.07%, *mithi roti* 16.89%, *pinni* 13.26% and *sevian* 20.67%.

## RECCOMENDATIONS

Stevia upto 75mg can be used as a sweetener in place of sugar in sweet cereal preparations as it provides sweet taste without calories and has no side effects. People should be encouraged to use stevia as it is natural, safe and has other therapeutic benefits.

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