

Development and Organoleptic Evaluation of some Hypoglycemic Products Prepared for type II Diabetes Mellitus Patients using Jamun Seeds



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Abstract

The incidence of diabetes mellitus is increasing all over the world. Diabetes is very fastly gaining the status of a potential epidemic in India. Various medicinal plants have been reported to have hypoglycaemic effects. Indian Ayurvedic Vaidas have long been prescribing jamun seed powder to keep diabetes under control. Due to non-acceptability of their original taste, efforts are needed to develop some food products. Keeping this in view, various products like salty and sweet biscuits, namkhattai, cake, namkpara, mathi were developed using 5 to 20 g dried jamun seed powder. Overall acceptability of the salty biscuits was minimum while namakpara was most acceptable. As Namakpara is most acceptable organoleptically, it may be supplemented in the diet of type II diabetes mellitus patients to manage their diabetes.

Key words: Type II diabetes mellitus, Jamun Seeds, food products, organoleptic evaluation

Introduction

With the altered lifestyle of the present society, there has been considerable change in the dietary habits of the people which has resulted in numerous health issues. One of such health issue is type II or non insulin dependent diabetes mellitus. It is a heterogeneous disorder characterized by impaired insulin secretion and impaired tissue sensitivity to insulin (Porte, 1991). WHO projections suggest that prevalence of diabetes set to increase upto 370 million by 2030 while in India, it is estimated to be 79.4 million in 2030 (Wild *et al.* 2004). It is the third commonest disease in the world next to the cardiovascular and fifth leading cause of death among women and sixth among men.

Although euglycemia can be achieved in diabetes by conventional insulin and hypoglycemic drugs therapy, complications cannot be prevented (Sharma *et al.* 1996). So the recent interest has been developed for a search of non-pharmacological methods in the management of diabetes. Various medicinal plants were found to possess hypoglycemic properties and Jamun (*Eugenia jambolana*) seeds is one of them. Jagodzinski *et al.* (1967) reported hypoglycemic properties of jambolana or Jamun seeds. Arbab *et al.* (1989) and Al-Zaid *et al.* (1991) reported hypoglycemic effects of jamun seeds in diabetic patients. Coimbra Teixeira *et al.* (1992) conducted an ethnopharmacological survey and revealed that the majority of people employ alternative medicines for their ailments. The most frequent used plant was jambolana. Kohli and Singh (1993) showed that the seed powder of *Eugenia*

jambolana given in the dose of 12g/day for 3 months resulted in marked symptomatic relief which progressively increased with duration of treatment. So efforts were made to develop some products using jamun seeds powder and evaluate them organoleptically.

Materials and Methods

The pulp of ripe jamun fruits was removed with stainless steel knife and seed coat was removed. The seeds kernel was dried in an oven at 60-65°C till complete drying. The dried seeds were ground to fine powder of 60 mesh sieve size in a cyclotec mill and stored in air tight plastic container and used for incorporation in various recipes. The products developed like sweet Biscuits (15 g jamun seed powder with 35g whole wheat flour), salty biscuits (10g jamun seed powder and 40g whole wheat flour), namkhattai (15g jamun seed powder and 60g whole wheat flour), mathi/namakpara (15g jamun seed powder and 50g whole wheat flour), fatless sponge cake (10g jamun seed powder and 40g whole wheat flour). The products were prepared using standardized recipes.

All the products developed were evaluated for organoleptic characters by twelve semi trained experts using nine-point hedonic rating scale. On the basis of their judgement the data obtained was analyzed for mean, standard deviation and analysis of variance (Snedecor and Cochran, 1967) and tabulated.

Results and discussion

All the products prepared from jamun seeds powder were acceptable having mean score "desirable slightly to desirable very much" (Table

1). Mean scores of colour and appearance of salty biscuits differed non-significantly from scores of colour and appearance of sweet biscuits and *nankhatai*. While it differed significantly from colour and appearance of cake, *namakpara* and *mathi*. Flavour of salty biscuits was significantly lower than flavour of cake, *namakpara*, and *mathi* and non-significantly different from flavour of sweet biscuits and *nankhatai*. Mean scores of flavour of sweet biscuits and *nankhatai* were similar. Texture of all the products was non-significantly different. Mean score of texture of cake and *nankhatai* were similar. Taste of salty biscuits was non-significantly lower than sweet biscuits and significantly lower than the remaining products. Mean score of taste of

namakpara was maximum, Overall acceptability of salty biscuits was minimum while *namakpara* was most acceptable.

Among ready to eat snacks, biscuits have several attractive features including wider consumption base, relatively longer self life and good eating quality (Tsen *et al*). Though long self life of biscuits makes large scale production and distribution possible, while as salty snack *namakpara* developed using Jamun seeds powder was found most acceptable in the present study. So it can be prepared and supplied as per demand of type II diabetes mellitus patients at a shorter intervals.

Table 1. Organoleptic characteristics of the products prepared from jamun seeds.*

Jamun seed Products	Colour	Appearance	Flavour	Texture	Taste	Overall Acceptability
Salty biscuits	6.50±1.32	6.25±1.59	6.67±1.43	6.67±1.18	6.33±1.65	6.48±1.32
Sweet Biscuits	6.75±1.30	6.67±1.25	7.08±0.75	6.92±0.86	7.00±0.82	6.88±0.86
<i>Nankhatai</i>	7.17±1.07	7.25±1.01	7.08±1.04	7.33±1.03	7.50±1.04	7.57±0.87
Cake	7.67±0.94	7.67±0.89	7.67±1.11	7.33±1.31	7.58±0.95	7.58±1.03
<i>Namakpara</i>	7.75±0.72	7.83±0.55	8.00±0.91	7.83±0.69	8.17±0.80	7.92±0.71
<i>Mathi</i>	7.58±0.49	7.58±0.49	8.08±0.91	7.17±0.69	7.92±0.86	7.65±0.62
SE(m)	0.31	0.31	0.32	0.30	0.39	0.28
CD(<0.05)	0.87	0.88	0.89	NS	0.90	0.79

Conclusion

It can be concluded from the present study that all the six products developed using Jamun seeds powder were acceptable but *namakpara* was found most acceptable snack and it is very easy to make at household level. So it is concluded that *namakpara* can be easily supplemented in the diet of type II diabetes mellitus patients to manage their blood glucose level without giving the impression that they are taking any medicine.

References

1. Al-Zaid, M. M., Hassan, M. A.M., Badir, N. Gumaa, K.A. 1991. Evaluation of blood sugar lowering activity of 3 plant diet additives. *International Journal of Pharmacognosy*. **29** (2): 81-88.
2. Arbab, A. G., Akhtar, T., Rab, F. 1989. Hypoglycemic activity of *Eugenia jambolana* (EJ) leaves. *Pakistan Journal of Medical Research*. **28** (3): 165-168.
3. Coimbera Texeira, C., Denni Luchs, F., Bhatta, R. M., Pereira Da Costa, A., Guedes Mussnich, D., Graf, Renquetat, G. 1992. Plants employed in treatment of diabetes mellitus- results of an ethropharmacological survey in Porto Algeria, Brazil. *Fitorapia*. **03**(4) 320-322.
4. Jagodzinski, M.S., Prot, P.B., Chanez, M., Bioteau, P. and Retsionamanga, A. R. 1967. Javapl principle and prevention of alloxan diabetes. *C. R. Acad. Sci. Paris Ser. D*. **264**: 1119-1123.
5. Kohli, R. R. and Singh, R.H. 1993. A clinical trial of jambu (*Eugenia jambolana*) in non insulin dependent diabetes mellitus. *Journal of Research in Ayurveda and Siddha*. **14** (3-4):89-97.
6. Porte, D. 1991. B-cells in type II diabetes mellitus. *Diabetes*. **40**: 166-180.
7. Sharma, R. D., Sarkar, A., Hazra, D.K., Mishra, B., Singh, J.B., Sharma, S.K., Maheshwari B.B., Maheshwari, P.K. 1996. Use of fenugreek seeds powder in the management of non insulin dependent diabetes mellitus. *Nutrition Research*. **16**(8):1331-1339.

8. Snedecor, G.W., and Cochran, W.G. 1967. Statistical Methods. Ames, Iowa State University Press.
9. Tsen, C. C., Peters, E. M., Schaffer, T., Hoover, W. J. 1973. Bakers Digest. **47**: 34.
10. Wild, S., Behir, M.B., Rogler, G., Green, A., Sicree, R., King, H. 2004. Global prevalence of diabetes. Estimates for the year 2000 and projections for 2030. Diabetes Care. **27**: 1047-1053.

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