

Effect of Pumpkin seedson the Sensory Attributes of Ready-to-Eat (RTE)Functional Paneer Burfi

Harshitha R¹, Harini Venugopal², Arunkumar H³, Manjunatha H⁴, B.P Pushpa⁵

¹Research scholar: Department of Dairy Technology, Dairy Science College, Karnataka Veterinary, Animal and Fisheries Sciences University, Bengaluru – 560024

²Associate professor: Department of Dairy Technology, Dairy Science College, Karnataka Veterinary, Animal and Fisheries Sciences University, Bengaluru – 560024

³Professor and Head: Department of Dairy Technology, Dairy Science College, Karnataka Veterinary, Animal and Fisheries Sciences University, Bengaluru – 560024

⁴Dean: Dairy Science College, Karnataka Veterinary, Animal and Fisheries Sciences University, Kalaburgi - 585316

⁵Assistant Professor: Department of Dairy Chemistry, Dairy Science College, Karnataka Veterinary, Animal and Fisheries Sciences University, Bengaluru – 560024

Abstract – Pumpkin seeds are by-product of pumpkin fruit processing and they were considered as agro waste. But nowpumpkin seeds utilization has been increasing nowadays because of its functional value. The present study was conducted by formulating RTE functional paneer burfi with different levels of pumpkin seeds. The supplementation level of pumpkin seeds varied from3, 5, 7 and 9 per centrespectively. The organoleptic assessment confirmed that the RTE functional paneer burfiinclusion with7per centpumpkin seedshas been optimised as it attained highestcolour and appearance score of 8.48, body and texture score of 8.37, Flavour score of 8.32 and overall acceptabilityscore of 8.37 compared to other experimental samples.

Keywords: Paneer burfi, Ready-to-Eat, Functional, Pumpkin seeds

Date of Submission: 04-04-2022

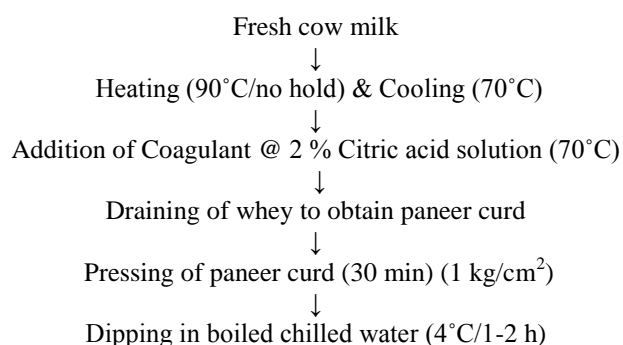
Date of acceptance: 19-04-2022

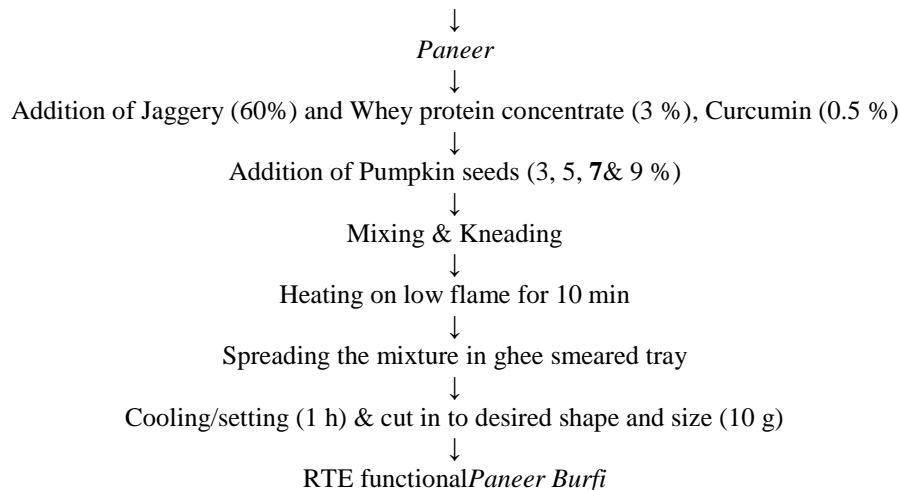
I. INTRODUCTION

Among the total milk production in India, 45-50 % of milk is converted to traditional dairy products. *Paneer* is a heat and acid coagulated product with high protein and fat content. It also contains high moisture content which limits its shelf life. Addition of functional ingredient add value to the *paneer*[1]. Pumpkin belongs to *Cucurbitaceae* family in which pumpkin seeds are used in cooked or roasted form. It contains essential amino acids, iron, calcium, omega-3-fatty acid, fiber, phytosterols, β -carotene and other phytochemicals. Gluten free pumpkin seeds can be recommended to people suffering from celiac disease. Pumpkin seeds incorporation in food products provide nutrition at lower cost along with increasing functional property of the product [2]. Attempt has been made to convert *paneer* to RTE functional *paneer burfi* by blending different levels of pumpkin seeds.

II. MATERIALS AND METHODS

Fresh cow milk was procured from student experimental dairy plant, Dairy Science College, Bengaluru. Food grade citric acid used for coagulating milk for *paneer* preparation. The RTE functional *paneer burfi* was prepared as per procedure outlined by Garatkaretal., (2021) with slight modifications [3]. Good quality pumpkin seeds were procured from REGENCY company, Navi Mumbai.





RTE functional *paneer burfi* incorporated with different levels of pumpkin seeds subjected to sensory evaluation for colour and appearance, body and texture, flavour and overall acceptability by adopting 9-point hedonic scale. Data obtained were statistically analysed using ANOVA [R-software (4.1.2)] and results were tabulated in Table 1.

III. RESULTS AND DISCUSSION

The sensory score regarding the effect of pumpkin seeds (3, 5, 7 and 9 per cent) on sensory attributes of RTE functional *paneer burfi* has been presented in Table 1 and Fig. 3.

i) Colour and appearance

The mean colour and appearance score of control sample was 7.51 as against 7.90, 7.99, 8.48 and 7.71 for treated samples with 3, 5, 7 and 9 per cent pumpkin seeds respectively. Statistical analysis revealed that various levels of pumpkin seeds exhibited significant difference on colour and appearance of experimental samples. RTE functional *paneer burfi* added with 7 % pumpkin seeds secured highest colour and appearance scores of 8.48 and minimum score of 7.71 for developed sample with 9 per cent pumpkin seeds. The decrease in colour and appearance score could be due to gradual browning of product as a result of Maillard reaction between sugars and amino acids. Abdelgadir and Mohamed (2020), reported increased colour and appearance scores as the colour become better in biscuit incorporated with 5 per cent pumpkin seeds and at 10 and 15 per cent the scores were decreased gradually [4].

ii) Body and texture

The mean body and texture score of control sample was 7.29 as against 7.61, 7.94, 8.37 and 7.50 for experimental samples with 3, 5, 7 and 9 per cent pumpkin seeds respectively. The body and texture scores of all the samples were found significantly different ($P < 0.05$). Pumpkin seeds addition at 7 % level to RTE functional *paneer burfi* attained highest score of 8.37 and minimum score of 7.50 for sample with 9 per cent pumpkin seeds. The lower scores could be due to crumbly body which affects the shape and texture of the product upon cutting. Pooja, (2021) observed increased body and texture scores at 2 per cent pumpkin seeds addition in sterilized functional *paneer kheer* [5]. Further at 3 and 5 per cent, the scores were decreased due to increase in viscosity of the product.

iii) Flavour

The observed flavour score of control sample was 7.02 as against experimental samples recorded 7.55, 7.85, 8.32 and 7.31 out of 9.00 for 3, 5, 7 and 9 per cent pumpkin seeds respectively. Based on statistical analysis, different levels of pumpkin seeds had significant effect on flavour score of RTE functional *paneer burfi*. Flavour score of RTE functional *paneer burfi* enriched with 7 % pumpkin seeds awarded highest score of 8.32 and least score of 7.31 for sample with 9 per cent pumpkin seeds. Higher flavour scores could be due to pleasant nutty flavour developed upon roasting of pumpkin seeds. Further, decrease in flavour scores could be due to beany flavour and slight decrease in sweetness of the product upon increase in total solid content at 9 per cent pumpkin seeds addition. Pooja, (2021) observed increased flavour scores at 2 per cent pumpkin seeds addition in sterilized functional *paneer kheer* [5]. Further at 3 and 5 per cent, the scores were decreased due to beany flavour observed in developed product.

iv) Overall acceptability

The mean overall acceptability score of control sample was 7.42. The experimental samples awarded overall acceptability score of 7.72, 7.92, 8.37 and 7.58 out of 9.00 for 3, 5, 7 and 9 per cent pumpkin seeds respectively. RTE functional *paneer burfi* with 7 % pumpkin seeds attained highest score of 8.37 and least score for sample with 9 per cent pumpkin seeds (7.58). The experimental samples were significantly different ($P<0.05$) with overall acceptability score of control sample. Saraswathi *et al.*, (2019) noticed enhanced overall acceptability scores for biscuits enriched with pumpkin seed powder at 15 % addition and scores were further decreased at 20 and 30 per cent addition [6]. Similarly, Pooja, (2021) reported decreased overall acceptability scores at 5 and 7 per cent of pumpkin seeds addition in sterilized functional *paneer kheer*[5].



Figure 1. Control
Pumpkin seeds)



Figure 2. RTE functional *paneer burfi* (7 %
Pumpkin seeds)

Table 1: Effect of Pumpkin Seeds on the Sensory attributes of RTE Functional *Paneer Burfi*

Pumpkin seeds (%)	Colour and appearance	Body and texture	Flavour	Overall acceptability
Control	7.51 ^a	7.29 ^a	7.02 ^a	7.42 ^a
3	7.90 ^b	7.61 ^b	7.55 ^b	7.72 ^b
5	7.99 ^b	7.94 ^c	7.85 ^c	7.92 ^c
7	8.48 ^c	8.37 ^d	8.32 ^d	8.37 ^d
9	7.71 ^d	7.50 ^e	7.31 ^e	7.58 ^e
CD($P=0.05$)	0.07	0.05	0.06	0.04

Note:

All the values are average of three trials
 Similar superscripts indicate non - significance at the corresponding
 critical difference
 Sensory analysis – 9-point hedonic scale

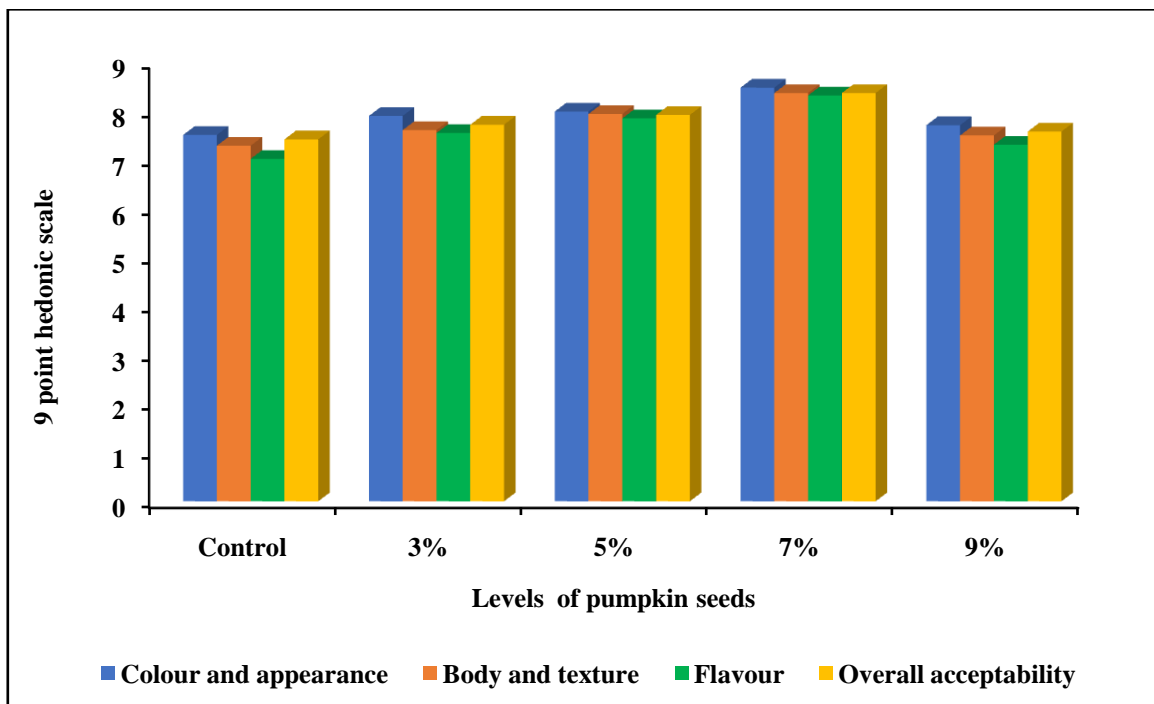


Figure3: Effect of pumpkin seeds on the sensory attributes of RTE functional paneer burfi

IV. CONCLUSION

Phytochemicals rich pumpkin seeds exhibit antioxidant, antidiabetic and antihyperlipidemic property. The present research finding mirrors the potentiality of pumpkin seeds supplementation in development of RTE functional *paneer burfi*. RTE functional *paneer burfi* enriched with 7 % pumpkin seeds has been optimised as it contributed to improved colour an appearance, body and texture, flavour and overall acceptability and highly acceptable compared to control. Thus, it can be concluded that pumpkin seeds incorporation increases the organoleptic property of the developed product.

REFERENCES

- [1]. PalM. (2019)“Paneer: A Very Popular Milk Product in Indian Sub-continent” Beverage and Food World, Vol. 46(7), pp. 23-25.
- [2]. Roshini, Agarwal and Suganya. (2020)“Development and Nutritional Evaluation of Brownies Incorporated with Pumpkin Seeds Flour” Annals. Food Science and Technology, Vol. 21(4), pp. 852-858.
- [3]. Gharatkar, Waikar, Ramod, Prasade and Dandekar. (2021)“Microbial Studies and Cost of Production of Chhana Burfi Prepared by Using Chocolate Flavoured Whey Protein Powder” The Pharma Innovation Journal, Vol.10(1), pp. 1-4.
- [4]. Abdelgadir, M.O. and Mohamed. (2020) “Formulation and Quality Evaluation of Biscuits Supplemented with Defatted Pumpkin Seed Flour” Journal of Academia and Industrial Research, Vol. 8(4), pp. 68-72.
- [5]. Pooja. (2021) “Development of Sterilized Functional Paneer Kheer Utilizing Pumpkin (*Cucurbita maxima*) seeds and whey protein concentrate (WPC)”M.Tech, Thesis Submitted to Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar.
- [6]. Saraswathi, D.Renu, R. and Srinivas, M. (2018)“Development and Quality Evaluation of pumpkin seeds and flaxseeds powder incorporated biscuits” International Journal of Food Science and Nutrition, Vol.3(2), pp. 78-83.