

Development of value added Papad using selected pulses

¹Venipriyadharshini.L,²Archana.P

¹Assistant professor, Department of Nutrition and Dietetics, Periyar University, Salem.

²Teaching Assistant, M.A Integrated home science, Alagappa University, Karaikudi.

ABSTRACT

Present study was under taken to formulate a value added papad using selected pulses with enhancement of nutritive value. The traditional ingredients include horse gram dhal, green gram dhal, bengal gram dhal, red gram dhal and mint powder to develop a novel snacks with enhanced taste and nutritional benefits. The developed pulses powder was made into papad by adding with black gram dhal and the product developed were compared with control sample for its nutritional composition, sensory parameters and storage study. Notable changes were observed between control and trial pulses papad. Compared with control sample, the pulses papad, the content of micro nutrients like calcium and iron were significantly higher in the trial. Formulation of a well liked snacks food (papad) with pulses could help to provide all the nutrients; and recover the health benefits which were lost in the process of milling by increasing the consumption of whole pulses in the diet. Furthermore making it available in the form of an instant Papad for the convenience of the home maker.

Keywords: *Formulation – Variation – Nutritive analysis – Shelf life study – Microbial study.*

INTRODUCTION

India is one of the oldest civilizations in the world with a rich cultural heritage, is the center of diverse food cultures comprising more than 1000 major and minor ethnic fermented and non fermented foods. In the sacred book of the Hindu called Bhagavad Geeta, foods are classified into three categories based on property, sanctity, and quality sattvika, raajasika, and taamasika (Tamang and Samuel, 2010; Tamang JP, 2016). Sattvika food, which denotes food for prosperity, longevity, intelligence, strength, health, and happiness, includes fruits, vegetables, legumes, cereals, and sweets.

Papad has been a popular food adjunct in the Indian diet for centuries. It is a toasted or deep-fat-fried snack food, containing primarily black gram flour (*Phaseolus mungo*), common salt and spices. The traditional method of papad making involves rolling thin circular disks from dough made from farinaceous materials, pulses, spices and other additives mixed with water and salt. As the methodology and ingredients for the preparation of papads differ from region to region, the quality, shelf life and taste of papads produced also vary. Invariably, the common desirable feature in all these methods is the diametrical expansion of papads on deep fat frying, because the diametrical expansion is considered one of the most important quality parameters (Shurpalekar et al.1970; Govindarajan et al.1971;Velu et al.2004). Several studies were reported on the effects of commonly used ingredients on the quality of papads. The effect of water, common salt, carbonates and particle size of flour on the quality of plain black gram papad has been studied by (Shurpalekar et al. 1972).

Papad is usually made out of dough containing pulse flour, edible starch flour and cereal flour with table salt, carbonates, spices, edible vegetable oil and miscellaneous additives with water (Shurpalekar et al. 1972). The dough is made into small spherical balls weighing 5–7 g each and is rolled in the form of thin circular discs of 10–15 cm in diameter and 0.4–0.7 mm thick. Papads in the raw form are sold in different dimensions on weight basis with different types of packaging materials. They are deep fat fried or toasted before consumption. Shurpalekar and Venkatesh 1975, reported that a minimum of 20% black gram flour content was essential in the dough for preparation of papads of acceptable texture, taste and diametrical expansion. Several studies were reported on the effects of commonly used ingredients on the quality of papads. The effect of water, common salt, carbonates

and particle size of flour on the quality of plain blackgram papad has been studied by (Shurpalekar et al. 1972). Papad is a dehydrated circular disc made of cereal or pulse flour that is consumed in roasted (dry) or deep fat fried form that resembles a thin wafer. It has also gained recognition as India's unique contribution to international cuisine (Saxena et al. 1996).

METHODOLOGY

The major ingredients selected for the formulation of value added pulses papad were Urad dhal powder, Green gram dhal powder, Horse gram dhal powder, Red gram dhal powder, Bengal gram dhal powder and Mint powder. Pulses are a good source of protein and fibre. It is higher in fiber and so the investigator selected pulses for the incorporation of papad. Pulses provides a significant source of vitamins and minerals, such as iron, zinc, folate, and magnesium, and consuming half a cup of beans or peas per day can enhance diet quality by increasing intakes of these nutrients (Mudryj et al. 2012).Pulses are important source of protein. Nutrients like energy, protein, fat, carbohydrate and riboflavin of 100g of the variation of the value added pulses papad were computed using nutritive value book of ICMR. Pulses are rich in complex carbohydrates (dietary fiber) and are important source of minerals and vitamins (Reg,1981). Standardization involves repeated testing with alteration of ingredients till the best of the product is obtained (www.food_science.Com). Urad dhal powder, water, salt and sodium carbonate are used as basic components in all variations.

Nutritive value was estimated for the selected value added pulses papad which from includes nutrients like carbohydrate, protein, fat and riboflavin by using the methods of anthrone method, macro kjeldhal method, volumetric greber's method and AOAC methods. The evaluated product was kept for shelf life analysis by using various packaging materials like aluminium foil cover, plastic cover and paper cover at room temperature. The sample which underwent for shelf life using various packaging materials, were taken to microbial analysis. The high scored product in overall acceptability was selected and given for microbial analysis in the laboratory.

RESULTS AND DISCUSSION

TABLE I
PERCENTAGE OF INCORPORATION OF PULSES PAPAD

INGREDIENTS	VARIATION (g)					
	STANDARD	I	II	III	IV	V
Urad dhal powder	83.2	68.3	55	41.6	28.3	15
Green gram dhal powder	-	3.3	6.6	10	13.3	16.6
Horse gram powder	-	3.3	6.6	10	13.3	16.6
Red gram dhal powder	-	3.3	6.6	10	13.3	16.6
Bengal gram dhal powder	-	3.3	6.6	10	13.3	16.6
Mint powder	-	1.7	1.7	1.7	1.7	1.7
Salt	0.7	0.7	0.7	0.7	0.7	0.7
Oil	1	1	1	1	1	1
Water	15	15	15	15	15	15
TOTAL	100	100	100	100	100	100

Table I shows that among all the variation of incorporation of pulses papad.

TABLE II
**COMPARISON OF COMPUTED AND ANALYZED NUTRITIVE VALUE OF
SELECTED VALUE ADDED PULSES PAPAD**

NUTRIENTS	COMPUTED NUTRITIVE VALUE	ANALYZED NUTRITIVE VALUE
Energy (k.cal)	875.75	306.05
Protein (g)	57.98	17.86
Fat (g)	6.78	1.41
Carbohydrate (g)	145.71	55.48
Moisture (g)	26.89	15.69
Calcium (mg)	384.3	104
Iron (mg)	3.8	4.66

Table II indicates that analyzed nutritive value of selected value added pulses papad had very low nutrients when compared with computed nutritive value of papad like moisture, energy, protein, carbohydrate, fat, calcium and iron. The calcium value of analyzed nutritive value of selected value added pulses papad was very low when compared with computed nutritive nutritive value of the papad. The moisture content of the analyzed nutritive value of value added papad was tremendously low because of the drying process of value added pulses papad.

TABLE III

MICROBIAL LOAD OF PULSES PAPAD PACKED WITH ALUMINIUM FOIL COVER AT ROOM TEMPERATURE

SAMPLE IDENTIFICATION	TOTAL BACTERIAL COUNT (10 CFU/g)			YEAST AND MOULD (10 CFU/g)		
	I st week of the IV th month	II nd week of the IV th month	III rd week of the IV th month	I st week of the IV th month	II nd week of the IV th month	III rd week of the IV th month
Papad sample kept in aluminum foil cover	15	35	50	1.8	4.6	8.3

Table III shows that bacterial count of value added pulses papad packed with aluminum foil cover at room temperature. The microbial analyzed products were quite higher from the first day to third day (Venipriyadharshini, 2018). At first week of the fourth month was 15x10 cfu/g ; On the second week of the four month of 35x10 cfu /g; On the third week of fourth month was 15x10cfu/g same way the mould count was as yeast and mould count of value added pulses papad packed with aluminum foil cover at room temperature on first week of the fourth month was 1.8x10 cfu/g; On the second week of the four month of 4.6 x10 cfu /g on the third week of fourth month was 8.3 x10cfu/g. the normal microbial content of yeast and mould packed food should be <100 the normal content of yeast and mould for unpacked food should be compared to the normal analyzed product were quit lower from the first week to third week. The rate of shelf life is high with the sample which stored in a container coated with aluminium foil (venipriyadharshini, 2018).

CONCLUSION AND FUTURE RECOMMENDATIONS

The nutritive value of trial value added pulses papad was higher when compared to control papad. It was also seen that the nutritional composition of papad when converted into final product was not much affected by microbes when it was made as papad. Developed snack food like papad with pulses will help to provide rich iron in the diet. The taste of the product was enhanced by addition of pulses. With the continuation of this study future studies can be followed as;

1. The vitamin analysis of the papad can be undertaken.
2. Replacement of black gram by any other substitutes can be conducted.
3. The developed value added pluses papad can be added with some other substitute or the proportion of black gram dhal can be increased to compensate the calcium loss.

REFERENCE

- Mudryj, a.n., u.n., hartman, t.j., mitchell, d.c., lawrence, f.r., and aukema, h.m. 2012. Pulse consumption in canadian adults influences nutrient intakes. Br. J. Nutr. 108(s1): Pp s27–s26. Doi:10.1017/s0007114512000724. Pmid:22916812.
- Rege dv. Nutritional aspects of legumes: some research needs. In: aiyer a, iyer kr, editors. Proceeding of the workshop on grain legumes. Bombay: protein foods and nutritional development association of India; 1981. Pp. 123–132.
- Saxena, a.k., manan, j.k, kulkarni, s.g. and shukla, i.c. 1996. Papad (a food adjunct) industry in india – a resume. Ind. Food pack. 50(6), Pp 102–110
- Shurpalekar, s.r. and venkatesh, k.v.l., 1975a, studies on papad based on blends of blackgram with cereals, pulses and

- starches. J. Food sci. Tech., 12: Pp 32-35.
- Shurpalekar,s.r., prabhakar, j.v., venkatesh, k.v.l., vibhakar, s. And amla, b.l., 1972, some factors affecting the quality of blackgram (phaseolus mungo) papads. J. Food sci. Tech., 9: Pp 26-29.
 - Shurpalekar,s.r.,venkatesh,k.v.l.,prabhakar,j.v.andamla,b.l.,1970,Physicochemical characteristics and quality assessment of commercial papads. J. Food sci. Tech., 7: Pp 100-105.
 - Tamang jp and samuel d. Dietary culture and antiquity of fermented foods and beverages.In: tamang jp and kailasapathy k, editors. Fermented foods and beverages of the world. Boca raton, fl (usa): crc press, taylor & francis group; 2010. P. 1e40.
 - Velu,v.,balaswamy,k.,nagender,a.Andrao, d.g., 2004, effect of various ingredients and additives on papads. Food sci. Res. Internl., 15(2): Pp 78-88.
 - Venipriyadharshini,“Development of value added bread using oats”. International journal of research and analytical researchVol- 5, issue-3 july-sep 2018.
 - Venipriyadharshini, “Formulation and Development of Value Added Biscuits Using Oats”, International Journal of Innovative Knowledge Concepts Vol – 6, issue – 10, Oct- 2018.

