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Acceptability of recipes prepared with rajkeera leaves powder incorporation

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ABSTRACT

Five recipes namely *Poori, Kharapara, Khari bundi, Chakli* and *Shev* were prepared by incorporation of rajkeera leaves powder at 5,10,15 and 20 per cent level. The acceptability was carried out to determine the most accepted level of incorporation. The result showed that the incorporation of rajkeera leaves powder up to 20 per cent in *Poori*, *Kharapara* and *Khari bundi* was highly accepted. However, *Chakli* was very well accepted as 15 per cent incorporation of rajkeera leaves powder. In case of *Shev* preparation 5 per cent was highly accepted.

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INTRODUCTION

Green leafy vegetables are rich in carotenoids iron, calcium, ascorbic acid, riboflavin, folic acid and appreciable amounts of other minerals (Devadas and Saroja, 1980). The leafy vegetables are highly perishable and heavy losses occur due to non availability of sufficient storage, transport and proper processing facilities at the production point (Pande *et al.,* 2000). Preservation of the vegetables can prevent huge wastage as well as make the available in the lean season. Dehydration is one of the best methods of preservation of leafy vegetables.

Rajkeera leaves are rich and inexpensive source of dietary fibre, protein, vitamins and wide range of minerals. Rajkeera leaves are very good source of β- carotene (14,190 ug/100g) and iron (18.4 mg/100g), fibre (2.1 g/ 100g), calcium (530 mg/100g) and vitamin C (81 mg/100g). These leaves are low in saturated fat and very low in cholesterol. It is also good source of niacin, riboflavin, vitamin B6, foliate and all other minerals (Nutritive value of Indian Foods, 2002). Rajkeera leaves contains higher proportion of insoluble lignin and has low glycemic responses.

Besides its immense nutritional properties it is recommended as a good food with medicinal properties for young children, patients with fever, haemorrhage, anaemia or kidney complaints and eye related diseases (Leo, 2008). It is natural source of antioxidants and can help not to only prevent deterioration of food quality characteristics like aroma, texture, taste, appearance by being a natural additives but also it helps to scavenge free radicals and oxidant and protect the body against diseases (Frei, 1994).

Rajkeera leaves are nutritious and within the reach but still the consumption are not as it should be. The incorporation of dried rajkeera leaves in various recipes improve the nutritional quality of products and increase the per cent of consumption of rajkeera leaves in the daily diet, subsequently the requirement of iron and vitamin A can be met, if consumed regularly. Thus in the present study an attempt has been made to incorporate different levels utilizing rajkeera leaves powder in preparation of various recipes.

METHODOLOGY

Rajkeera leaves were procured, cleaned, washed, dried in mechanical drier and fine powder was prepared in mixer. Five recipes namely *Poori*, *Kharapara*, *Khari bundi*, *Chakli* and *Shev* were prepared by incorporation of Rajkeera leaves powder at 0, 5, 10, 15 and 20 per cent. All the five products were prepared without (Control) and with different levels of incorporation of rajkeera leaves powder by the traditional methods of preparation (Thangama, 1975). The samples of all variations were served freshly to ten selected panel member for the evaluation of organoleptic characteristics like colour, texture, taste, flavour and overall acceptability to determine the most accepted level of incorporation. The sensory evaluation was carried out following ranking test.

The data were statistically analyzed by one analysis of variance and 'F' values were calculated to find out the difference in the recipes prepared with and without incorporation of varying levels of Rajkeera leaves powder.

OBSERVATIONS AND ASSESSMENT

The data regarding consumption practices and awareness of importance of rajkeera leaves are presented in Table 1. The daily consumption of rajkeera leaves was not noticed among the surveyed household. While 40 per cent occasional consumption was noticed among the families. On the other hand the consumption of rajkeera leaves in the powder form was noticed by only one family where as the rajkeera leaves were consumed in cooked and raw form by 32 per cent and 7 per cent of the selected households, respectively.

Table 1 : Consumption practices and awareness regarding importance of rajkeera leaves (n=100)

Sr. No.	Particulars	Percentage
1.	Frequency of consumption	
	Daily	0
	Weekly	0
	Occasionally	40
	Not consuming	60
2.	Form of consumption	
	Powdered	01
	Cooked	32
	Raw	07
3.	Awareness about nutrients	
	Iron	11
	Vitamin	23
	Unaware about nutrients	66
4.	Awareness of medicinal value	
	Anaemia	12
	Vitamin deficiency	07
	Unaware about medicinal value	81

Majority (66%) of the families were not having the awareness regarding nutrient content of rajkeera leaves. The awareness regarding nutrients iron, and vitamins content was by 11 and 23 per cent of the families, respectively. Further 80 per cent families were not having the awareness regarding medicinal value of rajkeera leaves.

The mean values of acceptability of *Poori* prepared with incorporation of rajkeera leaves powder are given in Table 2 .The results of organoleptic characteristics of *Poori* revealed that 20 per cent level of incorporation of rajkeera leaves powder was found to be most accepted in each scale of organoleptic characteristics. The highest mean scores recorded for colour, texture, flavour and overall acceptability was 4.9 while for taste mean score was 5.

The mean values of acceptability of *Kharapara* prepared with incorporation of rajkeera leaves powder are presented in Table 3. *Kharapara* prepared with 15 to 20 per cent level of incorporation of rajkeera leaves powder obtained the highest score for all evaluated organoleptic characteristics. It is obvious from result that even 5 and 10 per cent level of incorporation of rajkeera leaves powder in the preparation of *Kharapara* were found to be within the acceptability range as score secured were higher than 4.0.

The mean values of acceptability of *Khari bundi* prepared with incorporation of rajkeera leaves powder are depicted in Table 4. It is evident from result that *Khari bundi* prepared with 20 per cent level of incorporation of Rajkeera leaves powder secured highest score for all the organoleptic characteristics, except for texture. The highest score for texture was found in *Khari bundi* with 10 per cent level of incorporation of rajkeera leaves powder.

The mean values of acceptability of *Chakli* prepared with incorporation of rajkeera leaves powder are shown in Table 5. It is clear from result that score obtained for organoleptic characteristics of *Chakli* prepared with

Table 2 : Organoleptic evaluation of *Poori* prepared without and with incorporation of rajkeera leaves powder

Per cent of incorporation	Colour	Texture	Taste	Flavour	Overall acceptability
0 per cent	4.4	4.3	4.1	4.2	4.2
5 per cent	4.5	4.5	4.5	4.5	4.5
10 per cent	4.2	4.2	4.3	4.3	4.3
15 per cent	4.3	4.5	4.4	4.4	4.5
20 per cent	4.9	4.9	5.0	4.9	4.9
S.E. $\pm$	0.21	0.18	0.22	0.21	0.20
CD	0.60	0.51	0.61	0.60	0.57
F-value	1.5^{NS}	2.0^{NS}	2.5^{NS}	1.5^{NS}	1.6^{NS}

NS= Non-significant * and ** indicate significance of values at P=0.05 and 0.01, respectively

Table 3 : Organoleptic evaluation of *Kharapara* prepared without and with incorporation of rajkeera leaves powder

Per cent of incorporation	Colour	Texture	Taste	Flavour	Overall acceptability
0 per cent	4.8	4.9	4.7	4.8	4.8
5 per cent	4.3	4.4	4.5	4.4	4.4
10 per cent	4.1	4.4	4.4	4.4	4.4
15 per cent	4.4	4.6	4.6	4.5	4.6
20 per cent	4.4	4.5	4.7	4.7	4.7
S.E. ±	0.20	0.19	0.18	0.18	0.18
CD	0.57	0.53	0.51	0.50	0.50
F-value	1.50^{NS}	1.10^{NS}	0.49^{NS}	0.99^{NS}	0.96^{NS}

NS= Non-significant * and ** indicate significance of values at P=0.05 and 0.01, respectively

Table 4 : Organoleptic evaluation of the acceptability of *Khari bundi* without and with incorporation of rajkeera leaves powder

Per cent of incorporation	Colour	Texture	Taste	Flavour	Overall acceptability
0 per cent	4.6	4.6	4.2	4.2	4.4
5 per cent	4.3	4.5	4.4	4.5	4.6
10 per cent	4.2	4.7	4.3	4.3	4.3
15 per cent	4.0	4.5	4.3	4.0	4.2
20 per cent	4.4	4.4	4.5	4.5	4.5
S.E. ±	0.21	0.19	0.21	0.21	0.20
CD	0.59	0.54	0.59	0.59	0.56
F-value	1.00^{NS}	0.64^{NS}	0.28^{NS}	0.97^{NS}	0.59^{NS}

NS= Non-significant * and ** indicate significance of values at P=0.05 and 0.01, respectively

Table 5 : Organoleptic evaluation of the acceptability of *Chakli* without and with incorporation of rajkeera leaves powder

Per cent of incorporation	Colour	Texture	Taste	Flavour	Overall acceptability
0 per cent	4.9	4.6	4.7	4.7	4.9
5 per cent	4.5	4.7	4.5	4.5	4.5
10 per cent	3.9	4.5	4.4	4.2	4.2
15 per cent	4.3	4.8	4.5	4.6	4.6
20 per cent	3.9	4.5	4.0	4.1	4.0
S.E. ±	0.26	0.18	0.22	0.25	0.24
CD	0.72	0.50	0.62	0.70	0.68
F-value	2.50^{NS}	0.50^{NS}	0.64^{NS}	1.00^{NS}	2.00^{NS}

NS= Non-significant * and ** indicate significance of values at P=0.05 and 0.01, respectively

Table 6 : Organoleptic evaluation of *Shev* without and with incorporation of rajkeera leaves powder

Per cent of incorporation	Colour	Texture	Taste	Flavour	Overall acceptability
0 per cent	4.8	4.7	4.7	4.7	4.8
5 per cent	4.3	4.5	4.6	4.1	4.2
10 per cent	4.3	4.4	3.9	3.9	3.9
15 per cent	3.5	4.0	3.2	3.7	3.4
20 per cent	2.7	3.6	2.7	2.9	2.9
S.E. ±	0.29	0.25	0.77	0.25	0.25
CD	0.80	0.70	0.76	0.65	0.70
F-value	7.90**	2.90*	7.70*	7.70**	8.10**

NS=Non-significant * and ** indicate significance of values at P=0.05 and 0.01, respectively

Table 7 : Mean values of the overall acceptability of the products prepared without and with incorporation of rajkeera leaves powder

Sr. No.	Name of the product	Mean overall acceptability		
		Without rajkeera leaves powder	With rajkeera leaves powder	Highly accepted level of incorporation
1.	Poori	4.2	4.9	20
2.	Kharapara	4.8	4.7	20
3.	Khari bundi	4.4	4.5	20
4.	Chakali	4.9	4.6	15
5.	Shev	4.8	4.2	5

different levels of incorporation of rajkeera leaves powder were more than 3 and indicated that all the preparations were acceptable. In the preparation of *Chakli* 15 per cent level of incorporation of rajkeera leaves powder found to be highly accepted.

The mean values of acceptability of *Shev* prepared with incorporation of rajkeera leaves powder are given in Table 6. It is noticed from the result that all the levels of incorporation of rajkeera leaves powder in the preparation of *Shev* were found to be acceptable The maximum scores for all the organoleptic characteristics were recorded for 5 per cent level of incorporation of rajkeera leaves powder in *Shev* preparation.

The data regarding mean values of the overall acceptability of the products prepared without and with incorporation of rajkeera leaves powder is given in Table 7. It was observed from the table that the incorporation of Rajkeera leaves powder up to 20 per cent in *Poori*, *Kharapara* and *Khari bundi* was highly accepted. However, *Chakli* was very well accepted as 15 per cent incorporation of rajkeera leaves powder. In case of *Shev* preparation 5 per cent was highly accepted.

In conclusion it can be said that development of nutritious and organoleptically acceptable recipes with incorporation of conventional green leafy vegetable is a challenge for the food scientist. However, the preparation of such value added recipes are having the manifold benefits, they are cost effective, income generating, feasible to implement.

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