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Organoleptic Evaluation of the Value Added Products of Vegetable Cluster Bean

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ABSTRACT

The study was conducted to process cluster bean into powder for value addition for hypoglycemic and hypocholesterolemic benefits. Objective of the study was to conduct the organoleptic evaluation of the products viz., vermicelli upama and soup from vegetable cluster bean. The products were kept for organoleptic evaluation. Organoleptic evaluation results revealed that, there are no significantsdifference among the variations. Sensory attributes of vermicelli upama mean score ranged six to seven (6.25-7.20). In soup sample, significant difference was observed among the variations and as the amount of cluster bean powder increased, the appearance score level of the treated samples (CBS1, CBS2, CBS3) increased. Therefore, cluster bean can be processed into powder for value addition. Panel members accepted the product though they felt bitterness, to get hypoglycemic and hypocholesterolemic benefits.

CLUSTER BEAN or guar (*Cyamopsis tetragonaloba*) also known as guar ki phalli in Hindi and gorikayi in kannada is a widely grown crop but not on commercial basis on large scale. The crop is mainly grown in the dry habitats of Rajasthan, Haryana, Gujarat and Punjab and to a limited extent in Uttar Pradesh, Madhya Pradesh, Andhra Pradesh, Tamil Nadu, Karnataka and Kerala (Pabal, 2013).

Cluster bean is used in diabetes therapy because of its effects on carbohydrate and lipid metabolism. The action of cluster bean on carbohydrates and lipid metabolism is explained by its marked gel - forming capacity and the resulting delayed emptying of the stomach and delayed intestinal absorption of nutrients (Najemnik *et al*., 1984).

Cluster beans by virtue of rich soluble fibre content may be of therapeutic value in the control of hypercholesterolaemia. Soluble dietary fibre such as guar gum has been explored for their ability to reduce plasma cholesterol and hence, contributing significantly to cardio protective property. Guar gum is a direct fibre advocated for use in lowering serum total cholesterol levels in patients with hypercholesterolemia (Pande *et al*., 2012). Hypocholesterolemic effect of guar gum is due to its ability to form viscous gel in the small intestine (Fernandez *et al*., 1995).

Traditionally, the main use of guar plant was as a green manure and soil conserving cover crop. It is consumed as a vegetable and snacks by human beings (Saini, 2014). Usually cluster bean is consumed fresh after it is cooked but in the study it was processed into powder so that it can be used for value addition and also to increase its shelf life. Therefore, the objective of the study was to conduct the organoleptic evaluation of value added products from vegetable cluster bean. Vegetable cluster bean and other ingredients required for development of products were procured from the market. Cluster beans were washed, cleaned chopped and blanched. Mint leaf was also used; it was cleaned and blanched. Other ingredients (Bengal gram, soya bean and green gram) were soaked for eight hours. The blanched vegetables (cluster beans and mint) and soaked pulses were dehydrated at 60°C for 8 hours or till dehydrated.Vegetable cluster bean, mint and pulses were made into powder and then stored in a polythene cover. Value added cluster bean product were prepared *viz.*, Cluster bean vermicelli and cluster bean soup. Cluster bean vermicelli was prepared through extrusion machine by mixing the required dried powdered ingredients. Extruded vermicelli was dried again to remove the moisture and stored in a polythene cover for further study.Cluster bean vermicelli was made into three variations.

Thirty grams of vermicelli was used for preparation of the product (vermicelli upama) using the standard method (Parischa and Rebello, 1982). Cluster bean soup was made into four variations having one as control. It was also prepared by standard method with modification (Anitha, 2015) Sensory quality characteristics (Appearance, consistency, colour, aroma/ flavor, taste and overall acceptability) were evaluated by a panel of 20 semi-trained members using a 9-point Hedonic scale *viz.,* 9 – Like extremely, 8 – Like very much, 7 – Like moderately, 6 – Like slightly, 5 – Neither like nor dislike, 4 – Dislike slightly, 3 – Dislike moderately, 2 – Dislike very much and 1 – Dislike extremely (Avantina, 2010).

Table I depicts the sensory scores of cluster bean vermicelli. The results for sensory characteristics revealed that there are no significant differences among the variations and the characteristics. However, Cluster Bean Vermicelli-I obtained highest texture (7.00) and taste (7.20) whereas Cluster Bean Vermicelli-III obtained the lowest texture (6.65) and taste (6.25). Score of six denotes that the product was liked slightly by the panel members. The overall acceptability score of Cluster Bean Vermicelli-II and Cluster Bean Vermicelli-III are on par with each other (6.50). A study conducted by Kulkarni *et al*., 2012 was on par with the present study. The lower value of texture is due to the decrease in elasticity resulting from the decrease in gluten content (Kulkarni *et al*., 2012).

Table II presents the mean sensory score for cluster bean soup. As the amount of cluster bean increased the sensory score for taste decreased (8.20- 6.15). This may be due to the bitterness of

TABLE I

Mean sensory scores for cluster bean vermicelli upama

Product	Sensory attributes					
	Appearance	Texture	Color	Aroma/ Flavour	Taste	Overall acceptability
Cluster Bean Vermicelli-I	6.90	7.00	6.85	6.95	7.20	6.90
Cluster Bean Vermicelli-II	6.95	6.70	6.50	6.55	6.85	6.50
Cluster Bean Vermicelli-III	6.45	6.65	6.45	6.75	6.25	6.50
F value	NS	NS	NS	NS	NS	NS
SEm±	0.26	0.27	0.86	0.83	0.35	0.321
CD at 5%	-	-	-	-		-

N.S.- Non significant

TABLE II

Mean sensory scores for cluster bean soup

Product	Sensory attributes					
	Appearance	Consistency	Color	Aroma/ Flavour	Taste	Overall acceptability
Control	7.95	7.75	7.75	8.25	8.20	8.20
Cluster Bean Soup-I	6.75	6.75	6.30	6.65	6.55	6.65
Cluster Bean Soup-II	6.80	6.50	6.70	6.55	6.40	6.40
Cluster Bean Soup-III	6.90	6.75	6.85	6.20	6.15	6.60
F value	*	*	*	*	*	*
SEm±	0.17	0.20	0.19	0.23	0.21	0.19
CD at 5%	0.48	0.56	0.55	0.64	0.59	0.54

*Significant at 5% level

cluster bean powder. The presence of phenolic compounds is responsible for the bitterness and astringency of many foods and beverages (Drewnowski and Gomez-Carneros, 2000). It was observed that, with the increase of cluster bean powder in the treated samples (Cluster Bean Soup-I, Cluster Bean Soup-II and Cluster Bean Soup-III) there is an increase in the sensory score of appearance. This is due to the presence of soluble fibre (guar gum) in the cluster bean which contributed to the viscosity of the soup.

Therefore, it can be concluded from the study that cluster beans were processed and made in to powder for value addition. Although,the soup leaves a bitter after taste, it was accepted by panel members. Vermicelli upama was accepted without any bitter taste. Hence, it can be incorporated in the products to improve the hypoglycemic and hypocholesterolemic benefits.

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