

## Glycemic index of developed recipe

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### ABSTRACT

The recipes were developed utilizing low glycemic index foods viz., rajmah (*Phaseolus vulgaris*), green gram dhal (*Phaseolus aureus* Roxb.), soybean (*Glycine max* Merr.) and coriander leaves (*Coriandrum sativum*). Total 60 subjects were selected for the study. Out of these 30 subjects were not suffering from any disease (Control group) and 30 were diabetics (Experimental group). The anthropometric measurements of the subjects were recorded. Glycemic response of the developed recipe was assessed by supplementing the recipe to the subjects and calculated the glycemic index. The glycemic index of the developed recipe was found to be 31.46 and 37.32 for control and experimental group, respectively.

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**Key Words :** Recipe coriander leaves, Glycemic index

### INTRODUCTION

Diabetes mellitus is a universal health problem affecting human societies at all stages of development. The world health organization (WHO) (1980) has pointed out that the number of diabetes patients have been increasing rapidly all over the world. Diabetes has a strong genetic basis but, environmental influences are equally important for its manifestation (Murthy and Easwaran, 1990). Diabetes cannot be cured completely but it can be kept under control by using combination of diet, drugs and exercise. Proper diet helps in maintaining normal blood sugar level in diabetes. It is recognized that a good control over blood sugar level is essential for prevention or postponement of long term complications of diabetes. Since foods of low glycemic index and high fibre content raise the blood sugar to a lesser extent thus diabetic diets can be planned considering these two factors. Therefore, while planning the diet for diabetic people the food low in glycemic index should be used.

The glycemic index indicates the extent of rise in blood sugar in response to a food in comparison with the response to an equivalent amount of glucose. Glycemic index (GI) is a rating system for evaluating how different foods affect blood sugar level. A wide variety of foods are in common use by Indians. The glycemic indices also vary widely depending on the composition of the food items. Legume pulse have low glycemic index (30-40%). Fruits have an intermediate glycemic index (45-55

%). Cereals like wheat, rice and root vegetables such as potato, carrots have a high glycemic index (65-75%). Thus for the present study, the foods containing low glycemic index rajmah, green gram dhal, soybean and coriander were selected for the development of the recipe and its implication was assessed on control and diabetic subjects.

### METHODOLOGY

The recipe was developed utilizing low glycemic index foods viz., rajmah (*Phaseolus vulgaris*), green gram dhal (*Phaseolus aureus* Roxb.), soybean (*Glycine max* Merr.) and coriander leaves (*Coriandrum sativum*). Total 60 subjects were selected for the study. Out of these 30 subjects were not suffering from any disease (Control group) and 30 were diabetics (Experimental group). The purpose and discipline involved in the study was explained to all the subjects and they were allowed to continue to follow their usual living style, food intake consumption of medicine without any disturbance. The parameters like anthropometric measurements such as height, weight were recorded (Jellief, 1966) and body mass index was calculated. The clinical implication of the developed recipe was assessed by supplementing the recipe to the control and experiment group. The experiment was carried out by giving 50 g of glucose to control and diabetic subjects on first day of experiment followed by developed recipe on the next day. The fasting and post prandial blood

**Table 1: Anthropometric measurements of subjects**

	Weight ( kg)		Height ( cm )		Body mass index	
	Range	Mean $\pm$ SD	Range	Mean $\pm$ SD	Range	Mean $\pm$ SD
Control group	40 to 67	47.03 $\pm$ 6.13	150 to 156	152.5 $\pm$ 1.74	17.77 to 27.91	20.20 $\pm$ 2.48
Experimental group	46 to 87	65.55 $\pm$ 8.62	148 to 178	165.6 $\pm$ 8.35	18.93 to 33.20	24.09 $\pm$ 3.26

**Table 2: Blood glucose ( mg/ 100 ml) at fasting and post prandial (Hrs.)**

	Control group		Experimental group	
	For standard glucose Mean $\pm$ SD	For test recipe Mean $\pm$ SD	For standard glucose Mean $\pm$ SD	For test recipe Mean $\pm$ SD
Fasting	78.20 $\pm$ 13.79	76.80 $\pm$ 9.81	140.06 $\pm$ 36.35	138.93 $\pm$ 37.38
30 minutes	116.73 $\pm$ 22.16	93.03 $\pm$ 18.37	196.93 $\pm$ 52.02	157.93 $\pm$ 40.63
60 minutes	118.37 $\pm$ 23.95	85.73 $\pm$ 14.23	215.96 $\pm$ 34.02	163.06 $\pm$ 35.94
90 minutes	102.67 $\pm$ 17.84	79.43 $\pm$ 8.92	188.23 $\pm$ 42.83	151.5 $\pm$ 38.64
120 minutes	92.07 $\pm$ 18.98	79.10 $\pm$ 11.95	158.23 $\pm$ 43.39	141.16 $\pm$ 33.24
Area under curve (AUC)	3093 $\pm$ 1131.7	929.24 $\pm$ 349.36	4957.48 $\pm$ 1899.15	1788.65 $\pm$ 863.15
Glycemic index		31.46 $\pm$ 8.46		37.32 $\pm$ 13.27

glucose levels of the subjects were determined and recorded at 0,30,60,90 and 120 minutes. Using these values the glycemic index of the developed recipe was determined by following the standard formula (Jenkins *et al.*, 1984 ).

$$\text{Glycemic index} = \frac{\text{AUC of diet}}{\text{AUC of standard glucose}} \times 100$$

## OBSERVATIONS AND ASSESSMENT

The mean weight and height of the control and experimental group recorded was 47.03  $\pm$  6.13 ,65.55  $\pm$  8.62 kg and 152.5  $\pm$  1.74 , 165.6  $\pm$  8.35 cm, respectively. The calculated body mass index for control and experimental group was 20.20  $\pm$  2.48 and 24.09  $\pm$  3.26 with the range of 17.77 to 27.91 and 18.93 to 33.20, respectively (Table 1).

The mean values of blood glucose of control and experimental subjects at fasting and post prandial stage and AUC for standard glucose and test recipe with glycemic index values are presented in Table 2. The mean values for blood glucose at fasting for standard glucose and test recipe recorded were 78.20, 140.06 and 76.80 and 138.93 for control and experimental group, respectively. The mean values of blood glucose at post prandial stage were found to be increased in both the subjects at 30 and 60 minutes whereas the decline in the values was noticed after 60 minutes. The mean AUC for standard glucose and test recipe was noted 3093, 4957.48 and 929.24, 1788.65, respectively for both the subjects.

Further the mean glycemic index was found to be 31.46 and 37.32 for control and experimental group, respectively. On the whole it is clear from the results that the rise in blood glucose values after consumption of test recipe was less than that of standard glucose in both the groups. Thus it can be concluded that the developed recipe is of low glycemic index and suitable for diabetic subjects. The results of the study are in line with study conducted by Urooj and Puttaray ( 2000). It was reported that the post prandial values of the developed foods were significantly lower than those of the reference glucose.

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