

## Comparative study of *Allium sativum* (Garlic) and *Eugenia jambolana* (Jamun) as hypoglycemic and hypolipoidemic agent in *Diabetes mellitus* type II

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### ABSTRACT

The present study was carried out to investigate hypoglycemic and hypolipoidemic effects of garlic pods and jamun seed powder among the 60 obese and diabetic subject of 35 years to 55 years. All the subjects were examined for serum glucose and serum lipids. Results of the present study conclude that herbal treatment is effective and safe in initial stages of *Diabetes mellitus* type 2, and *Eugenia jambolana* (Jamun) is the best hypoglycemic agent in compared to *Allium sativum*.

**Keywords:** *Diabetes mellitus* type II, *Allium sativum*, *Eugenia jambolana*, medicinal plants,

### INTRODUCTION

*Diabetes mellitus* or 'Madhumeha' has been known for centuries and become common problem of the world. It is a chronic metabolic condition characterized by disorder of glucose homeostasis. Diabetes is an incurable chronic disease that affects almost every organ and system of the body. A number of plants have been beneficial in *Diabetes mellitus*. A Meta analysis of selected clinical trials employing garlic preparation showed significant reduction of total serum cholesterol, in human subjects Garlic purportedly lowers circulating triglycerides. It is one of those herbs which have favorable effect as hypoglycemic and hypolipidemic agent. The main aim of this study was to see the effect of Garlic pods as hypoglycemic and hypolipidemic in *Diabetes mellitus* type 2. The jamun seeds possess many medicinal properties in Ayurveda system of medicine The fresh seeds are most effective in diabetes as they quickly reduce sugar in urine This study was designed to see the effect of jamaun seed powder and Garlic pods on

serum glucose and lipid profile in type 2 diabetic individuals.

### MATERIAL AND METHODS

A study was done to evaluate the hypoglycemic and hypolipoidemic effects of garlic pods and jamun seed powder. Among the 60 obese and diabetic subject of 35 years to 55 years. 10 were taken as healthy control and 25 diabetic and obese were treated with garlic pods and 25 were treated with jamun seed powder. The criteria of inclusion of study group in subjects was FBS > 110 mg/dl of glucose, >290 mg/dl of cholesterol, > 210 mg/dl of triglyceride, <30 mg/dl of HDL, and > than 180 mg/dl of LDL. All the subjects were examined for serum glucose and serum lipids. Garlic pods & jamun seed powder 100mgs/day was given to the subjects of study group for 6 months and sample were collected at the starting day of study after two months, fourth and after six month of study for estimation of all parameters.

**Table 1: Comparison of control group with the study group in initial phase i.e without oral administration of Herbs (WOAH)**

Parameter	Control Mean Std. Deviation	WOAH Mean Std. Deviation	t value	p Value
FBG mg/dl	73.00 ± 5.86	145.56 ± 17.54	27.203	<0.0001
PPBG mg/dl	113.00 ± 3.31	201.84 ± 12.85	32.826	<0.0001
HBA1C %	5.4 ± 0.16	7.224 ± 0.37	21.497	<0.0001
UREA mg/dl	20.50 ± 1.35	24.04 ± 3.31	1.90	>0.05
CREATININE mg/dl	0.84 ± .00	0.8096 ± 0.09	1.620	>0.05
URIC ACID mg/dl	3.7 ± 0.16	3.564 ± 0.41	2.00	>0.05
CHOLESTEROL mg/dl	184.37 ± 12.36	262.48 ± 23.7	14.331	<0.0001
TRIGLYCIDE mg/dl	144.37 ± 31.32	221.28 ± 27.61	1.651	<0.001
HDL mg/dl	44.50 ± 2.04	37.12 ± 2.6	11.009	<0.0001
LDL	68.87 ± 5.41	180.04 ± 14.38	2.969	<0.0001

Results of table reveal that Fasting blood glucose, post prandial blood glucose, HbA1c, Total cholesterol, Triglycerides & LDL were highly significantly increased whereas HDL level is significantly decreased and no change is observed in serum urea, creatinine and uric acid parameters when compared with control.

**Table 2: Comparison between garlic and jamun supplement groups after a period of two month**

Parameter	GARLIC Mean 4 Std. Deviation	JAMUN Mean 4 Std. Deviation	T value	p value
FBG mg/dl	91.73±14.10	77.50±9.09	3.924	<0.0001
PPBG mg/dl	140.50±16.59	140.00±10.21	0.118	>0.05
CHOLESTROL mg/dl	219.84±15.61	241.85±5.45	6.011	<0.0001
TG mg/dl	48.46±5.44	106.30±4.11	2.161	<0.01
HDL mg/dl	48.53±5.47	40.25±2.93	6.120	<0.0001
LDL	66.42±15.39	56.10±4.37	2.904	<0.001
HBA1C %	5.67±.39	4.97±.66	4.476	<0.0001
UREA mg/dl	22.50±3.62	20.10±2.84	2.437	<0.01
CREATININEmg/dl	.82±.094	.63±.11	6.021	<0.0001
URIC ACID mg/dl	3.75±.43	3.82±.45	0.501	>0.05

After two months- Fasting blood Glucose, Post prandial blood Glucose, cholesterol, Triglycerides, LDL Cholesterol, urea, creatinine, uric acid in serum were found to be nonsignificant. Because the values of biochemical parameters of both these herbs were not much different. Changes in Serum HDL, Blood HbA1C level were found to be highly significant when garlic was compared with jamun. after two months of supplementation

**Table 3: Comparison between garlic and jamun supplement groups after a period of four months**

Parameter	GARLIC Mean 4 Std. Deviation	JAMUN Mean 4 Std. Deviation	T value	p value
FBG	109.88±16.45	95.40±9.62	3.484	<0.001
PPBG	153.00±18.49	152.95±14.05	0.010	>0.05
CHOLESTROL	234.12±22.54	248.50±10.33	-2.635	<0.01
TG	108.04±5.43	104.20±5.24	2.391	<0.01
HDL	47.72±4.30	37.10±3.75	8.694	<0.0001
LDL	67.80±12.79	58.30±4.55	3.157	<0.001
HBA1C	6.34±.35	6.21±.41	1.097	>0.05
UREA	25.12±3.89	23.10±3.72	1.769	>0.05
CREATININE	.81±.10	.72±.09	3.311	<0.001
URIC ACID	3.96±.35	3.88±.38	0.683	>0.05

After four months - Fasting blood Glucose, Total Cholesterol, HDL Cholesterol, blood HbA1c, Urea, Creatinine and Uric Acid are non significant. There are no differences in these biochemical parameters. Post Prandial blood Glucose, Triglyceride, LDL and total Cholesterol are highly significant when compared after four months of supplementation.

**Table 4: Comparison between garlic and jamun supplement groups after a period of six month**

Parameter	GARLIC Mean 6 Std. Deviation	JAMUN Mean 6 Std. Deviation	tvalue	p value
FBG	91.73±14.10	77.50±9.09	3.924	<0.0001
PPBG	140.50±16.59	140.00±10.21	0.118	>0.05
CHOLESTROL	219.84±15.61	241.85±5.45	6.011	<0.0001
TG	109.46±5.44	106.30±4.11	2.161	<0.01
HDL	48.53±5.47	40.25±2.93	6.120	<0.0001
LDL	66.42±15.39	56.10±4.37	2.904	<0.001
HBA1C	5.67±.39	4.97±.66	4.476	<0.0001
UREA	22.50±3.62	20.10±2.84	2.437	<0.01
CREATININE	.82±.094	.63±.11	6.021	<0.0001
URIC ACID	3.75±.43	3.82±.45	0.501	>0.05

After six months- Fasting blood Glucose, Post Prandial blood Glucose, HbA1c, urea, creatinine and uric acid are also found to be non significant because the values of biochemical parameters are similar for both the herbs. Serum Total Cholesterol, Serum Triglycerides, Serum HDL Cholesterol, Serum LDL Cholesterol are highly significant as there is much difference in the values of parameters of both the herbs after six months of supplementation

## RESULTS AND DISCUSSION

Results of the above study conclude that herbal treatment is effective and safe in initial stage of *Diabetes mellitus* type 2, and *Eugenea jambolana* (Jamun) is the best hypoglycemic agent in compared to *Allium sativum* (garlic) herbs.

Similarly, *Allium sativum* (garlic) is best for raising levels of the friendly lipid that is HDL. HDL in turn helps in lowering other harmful lipids due to which Diabetes patients have more chances of Obesity, Hypertension and cardiac disease. So use of *Eugenea jambolana* (Jamun), and *Allium sativum* (garlic) together will be beneficial for Diabetic patients.

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