AJHS

Asian Journal of Home Science
Volume **8** | Issue 1 | June, 2013 | 134-138

Research Paper

Effect of garlic chutney on hypertensive subjects

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Received: 20.11.2012; **Revised:** 25.03.2013; **Accepted:** 22.05.2013

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■ **ABSTRACT :** The study was undertaken to assess the effect of garlic chutney on hypertensive subjects. Garlic contains allicin, which is sulphur containing substance that may have hypertensive reducing properties. A sample of 60 hypertensive subjects was selected purposively. Their information regarding socio-economic status and health status was collected through questionnaire. They were divided into two groups, experimental and control, 30 in each group. The blood pressure reading was taken initially for all the 60 people. The prepared accepted garlic chutney was given to 30 subjects of experimental group for 60 days. The reading of systolic and diastolic blood pressure at 0, 15, 30, 45 and 60 days was recorded for both the groups. The collected data were analyzed statistically and it was concluded that consumption of 0.45 g of dried garlic powder for 60 days has the positive effect on hypertensive subjects for systolic and diastolic blood pressure reading.

■ **KEY WORDS :** Hypertension, Systolic and diastolic blood pressure, Garlic, Hypertensive subjects

■ **HOW TO CITE THIS PAPER :** Farzana, Farooqui Haffez and Fatima, Nuzhat (2013). Effect of garlic chutney on hypertensive subjects. *Asian J. Home Sci.,* **8** (1): 134-138.

The World Health Organization has estimated that high blood pressure causes one every 8 deaths world wide making the hypertension the third leading killer in the world. Hypertension is an elevated blood pressure. The upper or first number in a blood pressure reading is systolic pressure, and the lower or second number is called diastolic pressure. Hypertension is not a disease but a symptom indicating that some underlying disease is progressing. Hypertension impairs the pumping function of the heart and if untreated damage the heart, brain and kidney. A stroke occurs more often in patients with high blood pressure.

Garlic contains allicin which is the substance that may have hypertension reducing properties. Allicin has been shown to relax the blood vessels, which reduces blood pressure and damage to the walls of blood vessels.

Garlic (*Allium sativum*) has originated from Asia and belongs to the family Liliceae or the lily family. The peculiar strong scent of garlic is due to its sulfur containing compound or volatile oil known as allicin. Garlic consumption for extended period of time is followed by a modest reduction in cholesterol, LDL-cholesterol and triglyceride concentration in severe hypercholesterolemia patients. One half or one clove of garlic per day is sufficient to reduce cholesterol level.Sulfer compounds within garlic such as allicin, diallyl disulphide and allyl mercaptan are all effective in blocking cholesterol biosynthesis. Allyl sulphur compounds found in garlic can alter cellular thiols. More than one mechanism may be occurring because nicotinic acid and adenosine, other compounds found in garlic are also recognized to depress HMG-COA reductase activity. Garlic extract and several of its constituents possess significant antithrombolic properties. Allicin and ajoene likely to contribute to antiplatelet effect. W.H.O recommended 2 to 5 g fresh garlic or 0.4 to 1.2 g of dried powder can be used for treatment of hypertension.

■ RESEARCH METHODS

A group of sixty hypertensive subjects of age group 40-60 were purposively selected. Their information about socio-economic status and health status was collected through questionnaire. They were divided into two groups, experimental and control, 30 in each group. The prepared garlic chutney was given to experimental group only for 60 days. The blood pressure was recorded at 0, 15, 30, 45 and 60 days for all the subjects. The collected data were analyzed

statistically and results of the developed product on hypertensive subjects were studied.

■ RESEARCH FINDINGS AND DISCUSSION

The data pertaining to the socio-economic status and health status of the selected hypertensive subjects are presented in Table1.

Out of total selected 30 subject of experimental group 60 per cent belonged to age group 40 to 50 yrs and 40 per cent belonged to 51 to 60 yrs of age. In control group 43.33 per cent belonged to 40 to 50 yrs and 56.66 per cent belonging to the age group 51to 60 yrs.

The experimental group was comprising 36.66 per cent male and 63.33 per cent female where as the male and female

Table 1: Information regarding social economic status and heath status of selected hypertensive subjects (n=60)

Sr. No.	Attributes	Distribution of hypertensive subjects			
		Experimental group		Control group	
1.	**Age in yrs**				
	40 - 50	18	60	13	43.33
	51 - 60	12	40	17	56.66
2.	**Sex**				
	Male	11	36.66	15	50
	Female	19	63.33	15	50
3.	**Type of family**				
	Nuclear	16	53.33	9	30
	Joint	14	46.66	21	70
4.	**Education level**				
	Illiterate	18	60	22	73.33
	School education	8	26.66	6	20.00
	College education	4	13.33	2	6.66
5.	**Occupation**				
	Home maker	15	50	19	63.33
	Service	1	36.66	3	10
	Buiness	4	13.33	8	26.66
6.	**Income of family**				
	Rs < 10000	21	70	22	73.33
	Rs 10000 < 15000	7	23.33	6	20.00
	Rs > 15000 - 20000	2	6.66	2	6.66
7.	**Duration of disease in years**				
	< 5	22	73.33	12	40
	>5 – 10	8	26.66	18	60
	Heredity				
8.	Yes	24	72	27	90
	No	6	18	3	10
	Habit				
9.	Eating *Pan supari*	18	60	17	56.66
	Chewing *gutka*	8	26.66	10	33.33
	Drinking alcohol	2	6.66	2	6.66
	Smoking	2	6.66	1	3.33
	Kind of medicine using				
10.	Allopathic	20	66.6	30	100
	Ayurvedic	5	16.6	0	Nil
	Allopathic and *Ayurvedic*	5	16.6	0	Nil

Table 2: Mean values of organoleptic scores for the acceptability of garlic chutney

Variation	Colour	Texture	Taste	Flavour	Over all acceptability	Total
5 g	3.40	3.50	3.40	3.40	3.40	17.1
10g	4.40	4.40	4.30	4.30	4.20	21.6
15g	3.60	3.60	3.50	3.50	3.60	17.8
20g	3.50	3.60	3.60	3.60	3.50	17.8
Mean	3.72	3.77	3.70	3.70	3.67	
S.E.	0.16	0.18	0.16	0.61	0.15	
C.D-	0.45	0.49	0.44	0.44	0.43	
F Value	7.7**	5.41**	6.38**	6.38**	5.22**	

** Indicate significance of value at P=0.05

Table 3 : Mean value of the hypertensive subjects at 0, 15, 30, 45 and 60 days (n=30)

Sr. No.	Experimental group									
	Initial reading		15 Days		30 Days		45 Days		60 Days	
	Systolic	Diastolic	Systolic	Diastolic	Systolic	Systolic	Diastolic	Systolic	Diastolic	Systolic
1.	170	80	170	80	168	90	166	88	160	80
2.	170	80	170	80	168	90	166	88	160	80
3.	170	80	170	80	168	90	166	88	160	80
4.	170	80	170	80	168	90	166	88	160	80
5.	170	80	170	80	168	90	166	88	160	80
6.	170	80	170	80	168	90	166	88	160	80
7.	170	80	170	80	168	90	166	88	160	80
8.	170	80	170	80	168	90	166	88	160	80
9.	170	80	170	80	168	90	166	88	160	80
10.	170	80	170	80	168	90	166	88	160	80
11.	170	80	170	80	168	90	166	88	160	80
12.	180	100	180	100	176	100	172	98	170	92
13.	180	100	180	100	176	100	172	98	170	92
14.	180	100	180	100	176	100	172	98	170	92
15.	180	100	180	100	176	100	172	98	170	92
16.	180	100	180	100	176	100	172	98	170	92
17.	180	100	180	100	176	100	172	98	170	92
18.	180	100	180	100	176	100	172	98	170	92
19.	180	100	180	100	176	100	172	98	170	92
20.	180	100	180	100	176	100	172	98	170	92
21.	150	90	148	90	146	88	142	84	140	80
22.	150	90	148	90	146	88	142	84	140	80
23.	150	90	148	90	146	88	142	84	140	80
24.	150	90	148	90	146	88	142	84	140	80
25.	150	90	148	90	146	88	142	84	140	80
26.	150	90	148	90	146	88	142	84	140	80
27.	160	90	160	90	158	88	156	80	150	82
28.	160	90	160	90	158	88	156	80	150	82
29.	160	90	160	90	158	88	156	80	150	82
30.	160	90	160	90	158	88	156	80	150	82
Mean	167.667	89.333	167.267	89.333	164.667	92.333	161.667	89.133	157.667	83.867
S.D.	11.043	8.277	11.715	8.277	11.059	5.175	11.167	6.469	11.043	5.457
S.E.±	2.016	1.511	2.139	1.511	2.019	0.945	2.039	1.181	2.016	0.996
Variance	121.954	68.506	137.237	68.506	122.299	26.782	124.713	41.844	121.954	29.775

Table 2: Contd.……..…..

Table 2 : Contd……..

B. Control group										(n=30)
Sr. No.	Initial reading		15 Days		30 Days		45 Days		60 Days	
	Systolic	Diastolic	Systolic	Diastolic	Systolic	Diastolic	Systolic	Diastolic	Systolic	Diastolic
1.	170	100	168	100	168	98	168	96	168	98
2.	170	100	168	100	168	98	168	96	168	98
3.	170	100	168	100	168	98	168	96	168	98
4.	170	100	168	100	168	98	168	96	168	98
5.	170	100	168	100	168	98	168	96	168	98
6.	170	100	168	100	168	98	168	96	168	98
7.	170	100	168	100	168	98	168	96	168	98
8.	170	100	168	100	168	98	168	96	168	98
9.	170	100	168	100	168	98	168	96	168	98
10.	170	100	168	100	168	98	168	96	168	98
11.	170	100	168	100	168	98	168	96	168	98
12.	170	100	168	100	168	98	168	96	168	98
13.	160	100	160	98	158	96	158	96	160	90
14.	160	100	160	98	158	96	158	96	160	90
15.	160	100	160	98	158	96	158	96	160	90
16.	160	100	160	98	158	96	158	96	160	90
17.	160	100	160	98	158	96	158	96	160	90
18.	160	100	160	98	158	96	158	96	160	90
19.	160	100	160	98	158	96	158	96	160	90
20.	160	100	160	98	158	96	158	96	160	90
21.	160	100	160	98	158	96	158	96	160	90
22.	160	90	158	90	160	90	160	90	160	90
23.	160	90	158	90	160	90	160	90	160	90
24.	160	90	158	90	160	90	160	90	160	90
25.	160	90	158	90	160	90	160	90	160	90
26.	160	90	158	90	160	90	160	90	160	90
27.	160	90	158	90	160	90	160	90	160	90
28.	160	90	158	90	160	90	160	90	160	90
29.	160	90	158	90	160	90	160	90	160	90
30.	170	90	168	100	168	96	170	90	168	90
Mean	164.333	97.000	162.933	96.733	162.867	95.200	162.933	94.200	163.467	93.200
S.D.	5.040	4.661	4.571	4.218	4.629	3.305	4.719	2.797	4.032	3.986
S.E. ±	0.920	0.851	0.835	0.770	0.845	0.603	0.862	0.511	0.736	0.728
Variance	25.402	21.724	20.892	17.789	21.430	10.924	22.271	7.821	16.257	15.890

percentage in control group was equal *i.e.* 50 per cent.

In experimental group 53.33 per cent were from nuclear family and 46.66 per cent from joint family. In control group 30 per cent were from nuclear family and 70 per cent from joint family.

Majority of the subjects (60 per cent) were illiterate 26.66 per cent educated up to school education and 13.33 were educated up to college education in experimental group where as 73.33 per cent were illiterate, 20 per cent were having school education and 6.66 per cent were educated up to college education in control group.

All the females both in experimental and control group were housewives. The percentage of government servant was 36.66 per cent in experimental group, and 10 per cent in control group, whereas 13.33 per cent were having private business in experimental group and 26.66 per cent in control group.

It is clear from Table 1 that family income of 70 per cent subjects had up to< 10000,23.33 per cent had up to >10000-

<15000 and 6.66 per cent had more than 15000to 20000 per month in experimental group. Whereas the income of 73.3 per cent subject was up to 10000, 20 per cent subjects was up to >10000-<15000 and 6.66 subjects was up to <15000to 20000 per month in experimental group. Whereas 73.33 per cent, 20 per cent and 6.66 per cent were having <10000, >10000-< 15000 and >15000-20000, respectively in control group.

The blood pressure was found <5 years in 73.33 per cent subject and > 5-10 years in 26.66 in experimental group, whereas it was < 5 years in 40 per cent and > 5 -10 years in 60 percent subjects in control group.

Majority of the subjects were having the blood pressure in their heredity in both groups *i.e*. experimental and control group.

The habit of eating of *Pan Supari* was observed in 60 per cent, chewing *Gutka* in 26.66 per cent, drinking alcohol in 6.66 per cent and smoking in 6.66 per cent in experimental group whereas it was 56.66, 33.33, 6.66 and 3.33 per cent habits of eating *Pan Supari*, chewing *Gutaka* drinking alcohol and smoking, respectively in control group

All the subjects suffering from hypertension were taking the medicines allopathic or *Ayurvedic* in both the groups.

Table 2 shows the mean values of organoleptic scores for the acceptability for the garlic chutney. The garlic chutney having 10 g roasted chickpea with 0.45 g of garlic powder was having highest score and significant at 5 per cent and 1 per cent level of significance.

Table 3 indicate the mean values of hypertensive subject at 0, 15, 30, 45 and 60 days of the experiment the values are highly significant at 60 days at 5 per cent and 1 per cent level of significance.

Conculsion :

With the study it is concluded that consumption of 0.45g of dried garlic powder continuously for 60 days reduced systolic and diastolic blood pressure.

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