Prevention Of Atheromatous Heart Disease

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Abstract

Five thousand patients of atheromatous heart disease, presented as angina pectoris, were studied over a period of five years. After adding the “Husk of Isabgol” and “Aloe vera” (an indigenous plant known as ghee-guar-ka-paththa) to the diet, a marked reduction in total serum cholesterol, serum triglycerides, fasting and post parandial blood sugar level in diabetic patients, total lipids and also increase in HDL were noted. Simultaneously the clinical profile of these patients showed reduction in the frequency of anginal attacks and gradually, the drugs, like verapamil, nifedipine, beta-blockers and nitrates, were tapered. The patients, most benefitted, were diabetics (without adding any antidiabetic drug). The exact mechanism of the action of the above two substances is not known, but it appears, that probably they act by their high fibre contents. Both these substances need further evaluation. The most interesting aspect of the study was that no untoward side effect was noted and all the five thousand patients are surviving till date.

Introduction

Incidence of atheromatous heart disease is increasing day by day. The factors commonly responsible for atherosclerotic heart disease are diabetes mellitus, hypertension, smoking, family tendency in the form of hyperlipidemias, gout, excessive intake of saturated fatty acids, obesity, lack of exercise, etc.

For the first time, an Indian plant known as Aloe vera belonging to the Liliacee family along with the Husk of Isabgol, was tried on five thousand patients who had proved ischaemic heart disease due to atherosclerosis and the above two herbal medicines proved to be very effective when mixed with wheat flour paste before preparing the bread. This plant; Aloe vera, is used in Indian medicine as a tonic, purgative, aphrodisiac, antihelminthic, in various opthalmological disorders, enlargement of spleen, various forms of hepatitis, vomiting, fever due to bronchitis, erysipelas, skin disorders, asthma, leprosy, jaundice, strangury, as a carminative, various musculoskeletal disorders, menstrual suppression and various other nonspecific disorders.

Table I

Sex	Total Patients	Age Group	No. Of Patients	Diabetic Patients	Family History Of Diabetics	Total Hyper-tensives	Mild	Moderate
M	3489	35-40	869	612	408	115	65	50
M		41-50	1050	823	639	325	201	124
M		51-65	1570	989	805	467	301	166
Non-Diabetic Patients			1065			589	381	208
F	1511	35-40	231	85	60	25	15	10
F		41-50	589	207	189	67	49	18
F		51-65	691	451	371	210	108	102
Non-Diabetic Patients			768			353	240	113
	5000		5000	3167	2472	2151	1360	791

Table II

Age Group	No. Of Patients	Anterior Wall Ischaemia	Inferior Wall Ischaemia
Male Diabetics			
35-41	612	398	214
41-50	823	526	297
51-65	989	605	384
Male Non-Diabetics	1065	424	641
Female Diabetics			
35-40	85	31	54
41-50	207	96	111
51-65	451	302	149
Female Non-Diabetics	768	438	330
	5000	2820	2180

Table III

Fasting Blood Sugar (Normal 60-110 Mgm%)

Sex	Age Group	No. Of Patients	111-125 Mgm%	126-150 Mgm%
Males	35-40	612	398	214
	41-50	823	564	259
	51-65	989	598	391
Females	35-40	85	48	37
	41-50	207	140	67
	51-65	451	299	152
		3167	2047	1120

Post Parendial Blood Sugar (Normal 100-160 Mgm%)

Sex	Age Group	No. Of Patients	161-250 Mgm%	251-400 Mgm%
Males	35-40	612	405	207
	41-50	823	530	293
	51-65	989	611	378
Females	35-40	85	42	43
	41-50	207	131	76
	51-65	451	305	146
		3167	2024	1143

Table IV
Total Serum Cholesterol (Normal 125-285 Mgm%)

Sex	Age Group	No. Of Patients	286-350 Mgm%	351-425 Mgm%	426-500 Mgm%
Males	35-40	612	309	198	105
Diabetics	41-50	823	429	256	138
	51-65	989	547	232	210
Non-Diabetic		1065	219	657	189

Males					
Females	35-40	85	25	40	20
Diabetics	41-50	207	67	108	32
	51-65	451	112	298	95
Non-Diabetic Females		768	204	469	95
		5000	1912	2258	830

Table V
Serum Triglycerides (Normal Level 40-150 Mgm%)

Age Group	**No. Of Patients**	**151-170**	**171-200**	**201-250**
Male Diabetics				
35-40	612	305	203	104
41-50	823	415	301	107
51-65	989	509	249	231
Male Non-Diabetics	1065	208	701	156
Female Diabetics				
35-40	85	20	44	21
41-50	207	61	112	34
51-65	451	108	304	39
Female Non-Diabetics	768	198	502	68
	5000	1824	2416	760

Table VI
Total Lipids (Normal Value 450-850 Mgm%)

Age Group	**No. Of Patients**	**851-1000**	**1001-1200**	**1201-1350**
Male Diabetics				
35-40	612	291	180	141
41-50	823	402	281	140

51-65	989	517	241	231
Male Non-Diabetics	1065	205	670	190
Female Diabetics				
35-40	85	22	42	21
41-50	207	61	111	35
51-65	451	104	313	40
Female Non-Diabetics	768	198	480	90
	5000	1800	3118	882

Table VII
HDL Cholesterol (Normal Level 25 Mgm% to 75 Mgm%)

Age Group	**No. Of Patients**	**20-25**	**26-30**	**31-35**
Male Diabetics				
35-40	612	401	176	35
41-50	823	509	289	25
51-65	989	610	260	119
Male Non-Diabetics	1065	304	677	84
Female Diabetics				
35-40	85	15	50	20
41-50	207	101	98	8
51-65	451	156	258	37
Female Non-Diabetics	768	212	470	86
	5000	2308	2278	414

The plant has never been tried in the prevention of atherosclerotic heart disease. The other substance, Husk of Isabgol, in Indian medicine is mainly used to increase the bulk of faeces in constipation. This study is mainly based on its antiatherosclerotic properties.

Materials And Methods

Five thousand patients were selected for the study ranging from 35-65 years of age. *(Table I)* All patients had clear cut evidence of ischaemic heart disease in the form of unequivocal ECG changes apart from effort angina. *(Table II)* All patients were subjected to serum chemistry and were screened for fasting blood sugar, post parandial blood sugar *(Table III)*, total serum cholesterol *(Table IV)*, serum triglycerides *(Table V)*, total lipids *(Table VI)*, HDL cholesterol *(Table VII)*, BUN & other investigations were normal.

Out of 5'000 patients, 3167 were diabetics; 2572 patients had a history of smoking 10 to 15 cigarettes per day, for about five years; 2151 patients had evidence of hypertension which was not renal in origin. Out of these 2151 hypertensives, 1360 had mild hypertension and 791 patients had moderate hypertension. The patients, who had unstable angina, past history of myocardial infarction, severe hypertension, severe diabetics & patients on insulin therapy, history of left ventricular failure, gout, were not included in the study. Out of 1065 male non-diabetics, 912 had family history of hyperlipidemia and out of 768 female non-diabetic patients, 454 patients were having family history of hyperlipidemia. All 5000 patients were instructed not to consume alcohol in any form during the study. Smoking was also not allowed during study period.

All 5'000 patients were instructed to take 100 gms of fresh flesh gelatin of the plant Aloe vera and 20 gms of Husk of Isabgol mixed with wheat flour to prepare the bread. These breads were consumed at lunch and dinner. Apart from this, the strict dietary schedule and the drugs, which these patients were already taking, in the form of beta blockers, verapamil, nifedipine, isosorbide dinitrate, sulphonylureas, digoxin and diuretics and B-complex, were asked to continue and report weekly. All these patients were assessed clinically and biochemically.

Table VIII
Tread Mill Test Reading After One Year of Treatment

Age Group	No. Of Patients	Anterior Wall Ischaemia	No Evidence Of Ischaemia	Inferior Wall Ischaemia	No Ischaemia
Male Diabetics					
35-40	612	398	396	214	202
41-50	823	526	500	297	276
51-65	989	605	600	384	341
Male Non-Diabetics	1065	424	399	641	582
Female Diabetics					
35-40	85	31	29	54	52

41-50	207	96	93	111	107
51-65	451	302	259	149	133
Female Non-Diabetics	768	438	388	330	295
	5000	2820	2664	2180	1988

Table IX
Serum Cholesterol Levels Returned After Three Months (160-240 Mgm%)

Age Group	No. Of Patients	290-350	Normal	351-425	Normal	426-500	Normal
Male Diabetics							
35-40	612	309	306	198	192	105	100
41-50	823	429	408	256	238	138	130
51-65	989	547	504	232	231	210	206
Male Non-Diabetics	1065	219	200	657	599	189	182
Female Diabetics							
35-40	85	25	23	40	39	20	19
41-50	207	67	65	108	106	32	29
51-65	451	112	101	298	251	41	40
Female Non-Diabetics	768	204	162	469	431	95	90
	5000	1912	1769	2258	2087	830	796

Table X
Serum Trigylcerides Returned After Three Months (50-90 Mgm%)

Age Group	No. Of Patients	151-170	Normal	171-200	Normal	201-250	Normal
Male Diabetics							
35-40	612	305	300	203	200	104	98
41-50	823	415	399	301	300	107	77
51-65	989	509	489	249	229	231	223
Male Non-Diabetics	1065	208	158	701	680	156	143
Female Diabetics							

35-40	85	20	18	44	43	21	20
41-50	207	61	60	112	110	34	30
51-65	451	108	69	304	288	39	35
Female Non-Diabetics	768	198	140	502	485	66	58
	5000	1824	1633	2416	2335	760	684

Table XI
Total Lipids After Three Months of Treatment

Age Group	**No. Of Patients**	**851-1000**	**Normal**	**1001-1200**	**Normal**	**1200-1350**	**Normal**
Male Diabetics							
35-40	612	291	282	180	176	141	140
41-50	823	402	370	281	268	140	138
51-65	989	517	499	241	213	231	229
Male Non-Diabetics	1065	205	155	670	650	190	176
Female Diabetics							
35-40	85	22	21	42	41	21	19
41-50	207	61	60	111	109	35	31
51-65	451	104	84	313	282	34	25
Female Non-Diabetics	768	198	168	480	430	90	85
	5000	1800	1639	2318	2170	882	943

Table XII
HDL Cholesterol (Normal 50-75 Mgm) After Three Months

Age Group	**No. Of Patients**	**20-25**	**Normal**	**26-30**	**Normal**	**31-35**	**Normal**
Male Diabetics							
35-40	612	401	390	176	174	35	34
41-50	823	509	478	289	279	25	19
51-65	989	610	580	260	250	119	111
Male	1065	304	254	677	647	84	80

Non-Diabetics							
Female Diabetics							
35-40	85	15	12	50	49	20	20
41-50	207	101	97	98	96	8	7
51-65	451	156	126	258	238	37	28
Female Non-Diabetics	768	212	180	476	418	86	85
	5000	2308	2117	2278	2151	414	384

Table XIII
Blood Sugar Levels Before & After Treatmet

Age Group	**No. Of Patients**	**Fasting 110-115**	**Normal**	**Fasting 116-150**	**Normal**	**P.P 161-250**	**Normal**	**P.P 251-400**	**Normal**
Male Diabetics									
35-40	612	398	394	214	208	405	399	207	203
41-50	823	564	554	259	247	530	518	293	283
51-65	989	598	538	391	364	611	553	378	349
Female Diabetics									
35-40	85	48	45	37	35	42	40	43	40
41-50	207	140	136	67	65	131	126	76	75
51-65	451	299	259	152	145	305	275	146	129
	3167	2047	1926	1120	1064	2024	1911	1143	1079

Table XIV
Drug Therapy

Verapamil	**Beta-Blockers**	**ISDN**	**Digoxin & Diurects**
40-80 mgm in 2 divided doses (mild cases)	40-60 mgm in 2 divided doses in mild cases to non-diabetics	10 mgm 3 to 4 times per day	0.25 mgm of digoxin & dytide 1 tab./day
&	&		
80-120 mgm in 3	80-120 mgm in 3		

divided doses (moderate cases) to diabetics	divided doses in moderate cases to non-diabetics

Results

Most of the patients started responding from second week after the therapy was instituted. The improvement was noticed in the form of disappearance of angina pectoris and feeling of well being. The ECG changes also started improving and from 3 months to one year all patients, except 348, had normal tracing even after treadmill *(Table VIII)*.

None of the patients suffered fresh myocardial infarction during the study. The lipid profile also started improving after three months of institution of therapy *(Table IX)*.

Out of 5000 patients, 4652 patients had their normal levels of serum cholesterol ranging from 160 Mgm to 240 Mgm%, serum triglycerides from 50-90 Mgm% *(Table X)*.

Total lipids from 500 Mgm to 800 Mgm% *(Table XI)*, HDL cholesterol ranging from 50 Mgm to 75 Mgm% *(Table XII)*.

Out of 3167 diabetic patients, the blood sugar values, fasting and post parendial, started coming down to normal levels *(Table XIII)* except in 177 patients, and all the oral hypoglycemic agents had to be withdrawn by the end of two months of therapy. On the contrary, beta blockers, calcium channel blockers, isosorbide dinitrate and diuretics, etc., which the patients were taking for hypertension and angina control, could not be withdrawn completely *(Table XIV)* but their doses substantially reduced to half of the quantity which they were taking. Similarly the hypertensive patients did not show any significant change in their blood pressure levels. Total number of patients who did not respond to treatment were 525 (348 ischaemic and 177 diabetics out of 5000 patients).

Discussion

In the present study it has been noticed that the plant had a definite role in the prevention and management of atherosclerotic heart disease. The plant also had a definite role in controlling the blood sugar level in diabetic patients. The exact mechanism of the plant Aloe vera and Husk of Isabgol is not known but it appears that both these substances act by their high fibre contents and these substances need further evaluation. In the entire study no untoward side effect was noticed and all the patients were followed for a period of five years from July 1978 to June 1983 and all the patients turned up for regular follow up and till date all the 5000 patients

are surviving. The diabetic patients, except 177 patients, are on diet control alone and none of them has ever complained about any hypoglycemic episode during the study. There is no such study available in medical literature where such a large number (5000 patients) of patients are being followed up for five years and no Indian plant has ever been tried with such success. So this is a unique study of its own type.

To conclude, the Indian plant Aloe vera, when mixed with the Husk of Isabgol, was given to the patients of atherosclerotic heart disease, there was a definite and substantial improvement (about 95%) in their clinical profile apart from biochemical changes and ECG tracings. These two substances need further evaluation to find out the exact mechanism of action on atherosclerosis.

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