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Effect of Liv.52 on Serum Lipids in Normal* and Patients suffering from Ischaemic Heart Disease

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(*Cases with raised serum lipids without ischaemic heart disease)

The liver is the key organ concerned with metabolism of carbohydrates, proteins, lipids and others. It is well-known that synthesis of cholesterol takes place in the liver. Synthesised cholesterol is transported in the blood in combination mostly with beta-lipoproteins. It is also known that the liver is the site of conversion of dietary fats into fats characteristic of the species. So it can be presumed that a healthy liver plays an important part in maintenance of levels of serum cholesterol, phospholipids, lipoproteins, neutral triglycerides, which are the biochemical factors leading to atherosclerosis. Any preparation that can stimulate and thereby improve the liver functions could be expected to play a beneficial part in correcting the levels of these lipids, and in turn, arrest and possibly reverse the process of atherosclerosis. It is reported that an indigenous drug, Liv.52 containing indigenous ingredients has a stimulating and correcting effect on the liver[3,4,5]. Liv.52 contains Capparis spinosa, Cichorium intybus, Solanum nigrum, Cassia occidentalis, Terminalia arjuna, Achillea millefolium, Tamarix gallica and Mandur bhasma prepared in the juices and decoctions of various hepatic stimulants. The drug may affect beneficially the levels of these active lipids and therefore the preparation may be of significant therapeutic value as an adjunct to the treatment of conditions leading to atherosclerosis and by reducing the levels of these lipids in the serum of cases of established ischaemic heart disease.

MATERIAL AND METHODS

This study has been undertaken to assess and evaluate the effects of Liv.52 on levels of serum cholesterol and other lipids in two groups of 40 cases: (a) a group of 20 apparently normal persons, (b) a group of 20 patients suffering from ischaemic heart disease, of which 18 were males (3 with hypertension, 7 with diabetes, 8 without diabetes or hypertension) and two females, one with hypertension and the other with ischaemic heart disease alone. Each group was studied and assessed separately. After a careful history taking, clinical examination and electrocardiogram the fasting sample of venous blood collected. Serum cholesterol, phospholipids and lipoprotein fraction precipitated by heparin were estimated. All the patients were put on Liv.52, 2 tablets three times a day, before food for a period of three weeks. They were asked to report at weekly intervals if there were any side effects. All these patients were checked up again after a period of three weeks when history, clinical examination, electrocardiogram and biochemical examination of the blood in the fasting stage were repeated. The progress was assessed both subjectively and objectively. The subjective improvement from the point of view of the patients was arbitrarily divided into good, fair and no change. Objective assessment was made by the physical examination, electrocardiogram and biochemical investigations. The subjects studied were classified into three socio-economic groups.
Group I with monthly income less than Rs. 500.
Group II with monthly income between Rs. 501 to Rs. 1,500.
Group III with monthly income above Rs. 1,500.

Table 1: Age distribution		
Years	Normal	I.H.D.
35-40	3 (15%)	1 (05%)
41-50	12 (60%)	5 (25%)
Over 50	5 (25%)	14 (70%)

Table 2: Sex distribution		
	Males	Females
Normal	20 (100%)	–
I.H.D.	18 (90%)	2 (10%)

The weights were classified as: under weight (less than 15% of normal), normal overweight (over 15%) and obese (above 20%).

Table 3: Degree of obesity		
	Normal	I.H.D.
Underweight	–	1 (5%)
Normal weight	10 (50%)	13 (65%)
Overweight (over 15% more than normal)	–	2 (10%)
Obese (above 20% of more than normal)	10 (50%)	4 (20%)
Total	20	20

The dietetic history was taken with a view to ascertain vegetarian or non-vegetarian diet in both the groups.

Table 4: Dietetic background		
	Vegetarian	Non-vegetarian
Normal	8 (40%)	12 (60%)
I.H.D.	10 (50%)	10 (50%)

The common habits of life such as addiction to alcohol, regular smoking were noted in both the groups.

Table 5: Habits		
	Normal	I.H.D.
Alcohol	11 (64.7%)	5 (55.6%)
Smoking	6 (35.3%)	4 (44.4%)
Total	17	9

These included 20 normal and 20 with I.H.D. with the manifestation of angina and/or fatigue. All the subjects were males except the two females in the I.H.D. group.

Table 6				
1	Normal			20
2	Ischaemic heart disease			20
	(a)	Diabetes	7 (35%)	
	(b)	Hypertension (3 males + 1 female)	4 (20%)	
	(c)	No hypertension or diabetes (8 males + 1 female)	9 (45%)	

Socio-economic status and age

Socio-economically all the normal persons came from group II. Among the 18 male patients, 16 (88.9%) belonged to group II and 2 (11.1%) to group III. Among the female patients studied, one

each was of group II and group III. Majority of the persons in the normal group came from the age group 41-50 years and the majority in the ischaemic group from the age group of over 50.

Weight
Fifty per cent of the normal groups were normal weight; 50% were more than 20% of normal weight. Among patients with ischaemic heart disease, 5% were underweight, 65% were of normal weight, 30% were more than 15% of the normal weight.

Habits
Fifty five per cent of the normal and 25% of the ischaemic heart disease patients were used to a moderate intake of alcohol. Thirty percent of normal and 20% of the ischaemic heart disease patients were smokers, and 40% of normal and 50% of the ischaemic heart disease were vegetarians.

RESULTS
Subjectively there was fair improvement in 40% and good in 15% of the cases among the normal. In subjects with I.H.D. there was fair improvement in 50% and good in 13%. In cases of I.H.D. with hypertension, there was fair improvement in 67% and good in 13% of the cases. In cases of I.H.D. with diabetes, there was fair improvement in 35% and good in 15%.

Fifty five per cent of normal persons and 75% of I.H.D. patients had a subjective feeling of well-being.

Physical examination
Physical examination did not show any significant changes following therapy except in patients with hypertension–actually the patients with hypertension showed better response.

Electrocardiographic changes
There was no significant change in the ECG pattern of the normal and some of the I.H.D. patients studied. However, out of 7 cases of I.H.D. with diabetes, two cases showed improvement.

Biochemical changes
In the normal group there was reduction of cholesterol in 55%, lipoprotein fraction in 65% and phospholipids in 40%.

Similar beneficial effects were also found in the ischaemic heart disease group. Serum cholesterol, lipoprotein fraction and phospholipids respectively showed reduction in 39%, 50% and 50%.

Table 7: Effect of Liv.52 on serum cholesterol, phospholipids and lipoprotein fractions

		Normal group – 20 cases			I.H.D. groups* – 12 cases		
		Average alteration in mg.	No. of cases	% of cases	Average alteration in mg	No. of cases	% of cases
I Cholesterol	Decrease	30 mg	11	55%	30 mg	7	39%
	Increase	20 mg	7	35%	23 mg	4	22%
	No change	–	2	10%	–	7	39%
II Lipoproteins	Decrease	64 mg	13	65%	54.2 mg	9	50%
	Increase	25.5 mg	6	30%	61 mg	5	28%
	No change	–	1	5%	–	4	22%
III Phospholipids	Decreases	36.6 mg	8	40%	45.2 mg	9	50%
	Increase	56 mg	6	30%	54.4 mg	5	28%
	No change	–	6	30%	–	4	22%

* Does not include results of two female subjects studied.

Side effects
Careful history was taken for nausea, vomiting, diarrhoea, rashes, pruritus or giddiness. It was not necessary to stop or decrease the dosage of the drug as no side or toxic effects were observed or complained of in any of the cases studied.

DISCUSSION

Serum lipids, namely cholesterol, phospholipids and β-lipoproteins are some of the biochemical factors responsible for atherosclerosis. Several drugs have been introduced in the last decade in an attempt to reduce these lipids. These drugs are costly and have their own side effects. Their beneficial effects arse still controversial. Some of them are Nicotinic acid and its derivatives, thyroid analogues (tetra iodo D-thyroxin), or a combination of Ehtyl-p-cholorophenoxy isobutyrate, and androsterene and cholesteramine resin.

In this study an attempt has been made to investigate the effects of the drug Liv.52 on lipid metabolism. The results in this study are very encouraging as the drug was found to be good in general, since most of the subjects expressed a sense of well-being and they felt better after the treatment and had no general discomfort or toxic effects. Thorough physical examination and ECG findings did not reveal any significant changes. The beneficial effect of reduction in cholesterol was found to be 55% and lipoprotein fraction 65% and phospholipids 40% in the normal persons. There was some increase in some factors in about 25% cases but the other factors showed relative decrease. Similar beneficial results were also found in the ischaemic heart disease group of cases and one can conclude that this drug has a beneficial effect in lowering blood lipid levels–high levels of which are presumed to accelerate atherosclerosis.

SUMMARY AND CONCLUSION

1. Liv.52 therapy was tried in a group of 40 persons–20 normal and 20 with ischaemic heart disease with or without diabetes or hypertension.

2. Liv.52 two tablets t.i.d. were administered for 3 weeks and the patients were studied clinically, biochemically and with ECG.

3. Fifty five percent of the normal persons and 75% of the ischaemic heart disease patients had a subjective feeling of well-being.

4. In the ischaemic heart disease group, serum cholesterol, lipoprotein fraction and phospholipids were decreased in 39%, 50% and 50% of cases respectively.

5. In the normal group, serum cholesterol, lipoprotein fraction and phospholipids were decreased in 55%, 65% and 40% of cases respectively.

6. The drug Liv.52 has shown promising results in lowering serum lipids and deserves further study and scrutiny.

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REFERENCES

1. Varley, H., *Practical Clinical Biochemistry,* William Heinemann Medical Books, Ltd., 4th Edition, pp. 309 and 317.

2. Burstein, M., *Proceedings of IV International Congress on Clinical Chemistry,* (1960): p. 190.

3. Joglekar, G.V. and Leevy, C.M., *J. Ind. Med. Prof.* (1970): 12, 7480.

4. Joglekar, G.V. and others, *J. Exptl. Med. Sciences* (1967): 11, 7.

5. Sule, C.R. and others, *J. Ind. Med. Prof.* (1968): 14, 6391.