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Lowering of Serum Total Cholesterol to High Density Lipoprotein Cholesterol Ratios in Hypercholesterolaemic Patients by Abana: Possible Cardioprotective Action

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ABSTRACT

Only a limited number of drugs are available to influence the levels of high density lipoprotein cholesterol (HDL-C) in human beings. A low level of high density lipoprotein cholesterol is now considered to be a risk factor for coronary heart disease (CHD). Fifty-one cases of hypercholesterolaemia with increased ratios of total cholesterol to high density lipoprotein cholesterol were selected for a clinical trial with an indigenous remedy, Abana. After 12 weeks of therapy, high density lipoprotein cholesterol levels showed an increasing trend. The ratio of total cholesterol/high density lipoprotein cholesterol was modified after therapy. This indicates that Abana can prevent coronary heart disease in coronary-prone cases. Hence Abana may be advocated for cardioprotective therapy.

INTRODUCTION

An inverse association between the incidence of CHD and HDL-C concentrations has been observed. In multiple epidemiologic studies, different ethnic groups have shown decreased HDL and elevated low density lipoprotein (LDL) levels as a potent risk factor of CHD[6-10]. Several factors are now known to alter the levels of HDL-C. Age, sex, body-mass index, exercise and alcohol intake are associated with HDL-C levels. Diet and drugs also alter the levels of HDL-C in clinical as well as in experimental studies.

More recently Gemfibrozil was found useful in increasing HDL-C. Continuous use of this drug also reduces TC, LDL-C and triglycerides (TG)[4]. In the Lipid Research Clinics Program Prevalence Study[3] (LRPPS), a positive correlation was noted between dietary cholesterol intake and serum cholesterol levels in schoolboys. Evidence from animal studies has suggested that dietary protein influences plasma protein levels. But in human beings, the findings are not consistent[5].

In the Ayurvedic system of medicine several drugs have been mentioned as cardioprotective. Scientific evaluation of such drugs is, however, limited. In recent years global attention has been directed towards the clinical evaluation of indigenous drugs in the prevention and management of CHD. Abana is a herbomineral compound generally advocated for angina pectoris and coronary heart disease (CHD). It improves the contractility of the heart and regulates lipoprotein metabolism in CHD cases. Abana also exerts a significant influence on lipoprotein levels[1].

Abana is a combination of *Terminalia arjuna* (Arjuna), *Withania somnifera* (Ashwagandha), *Phyllanthus emblica* (Amla), *Glycyrrhiza glabra* (Yashtimadhu), *Boerhaavia diffusa* (Punarnava), *Centella asiatica* (Brahmi), *Convolvulus pluricaulis* (Shankhapushpi), *Nardostachys jatamansi* (Jatamansi), *Pearl pishti* (Moti), etc., in varying doses.

MATERIAL AND METHODS

Fifty-one diagnosed cases of hypercholesterolaemia were selected for this clinical trial with Abana. Most of the cases had evidence of angina pectoris, hypertension and obesity. Cases having evidence

of diabetes mellitus were excluded from this series. A comprehensive clinical examination was carried out. Apart from routine investigations, glucose tolerance and obesity index were also measured. For comparable results, apparently normal individuals with no evidence of lipid disorders were selected to serve as controls.

The overnight fasting blood sample was taken and the serum TC[12] and HDL-C[8] were measured. After careful clinical and laboratory examination, Abana was introduced at a dosage of 2 tablets t.i.d. continuously for twelve weeks. The normal as well as hypercholesterolaemic cases were advised a prescribed regimen of diet and exercise during the entire course of study. At the end of twelve weeks all the investigations were repeated. Those cases who could not follow the prescribed regimen diet and therapy were excluded from the series. The initial findings were compared with those after 12 weeks of follow-up.

RESULTS

A significant elevated level of TC was noticed in the present series, the ratio of TC/HDL-C being found increased (>3.5) (Table 1). After 3 months of therapy a reverse trend was observed. TC showed a decreasing trend and the ratio also decreased to a significant extent. In the normal control series no significant changes in either the TC and HDL-C levels were observed (Table 2). Thus it is evident that Abana has a capacity to modify the increased TC/HDL-C ratio.

Table 1: Effect of Abana therapy on total cholesterol and HDL cholesterol (mean ± S.D.)

Group	Total cholesterol (mg/dl) n = 51	HDL cholesterol (mg/dl) n=51	TC/HDL-C (risk factor)
Initial	280.09 ± 46.68	49.05 ± 11.72	6.19 ± 2.30
After 12 weeks of therapy	204.08 ± 40.66	54.07 ± 11.89	4.03 ± 1.43
Comparison: Initials vs. after 12 weeks of therapy	$p<0.001$	$p<0.05$	$p<0.001$

Table 2: Pattern of total cholesterol and HDL cholesterol in the control group

Group	Total cholesterol (mg/dl) n = 10	HDL cholesterol (mg/dl) n=10	TC/HDL-C (risk factor)
Initial	255.100 ± 16.842	51.60 ± 6.433	4.962 ± 0.779
After 12 weeks of therapy	268.800 ± 20.302	49.80 ± 5.266	5.397 ± 0.722
Comparison: Initials vs. after 12 weeks of therapy	$p<0.05$ N.S.	$p<0.05$ N.S.	$p<0.05$ N.S.
N.S. = Not significant			

DISCUSSION

As indicated earlier, HLD-C is one of the most important risk factors for the development of CHD. High HDL-C prevents atherosclerosis and reduces the risk of CHD. Alcohol and moderate exercise are responsible for increasing the level of HDL-C[7,9]. The hypolipidaemic drugs generally do not elevate HDL-C. That drug which can increase the level of HDL-C may be considered as a cardioprotective. Abana contains: *T. arjuna* which is a known cardioprotective component. The hypocholesterolaemic property of *T. arjuna* has also been reported by some investigators[11]. But it is not known for certain, which component of Abana enhances the HDL level. It is possible that the combined effect of several ingredients may be responsible for the significant increase. Earlier it has been reported that Abana reduces the cholesterol and triglyceride levels in CHD patients[2]. The increasing trend of HDL-C levels has provided us with a ground for more precise investigation to evaluate the effect of Abana on the TC/HDL-C ratio. From Table 1 it is evident that the TC/HDL-C ratio dropped significantly after 12 weeks of Abana therapy. It indicates that this drug has a

cardioprotective property. The continuous oral administration of Abana may prevent the development of CHD.

The present study is preliminary in nature and requires a bigger sample size to prove the beneficial effect of Abana.

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