Years of observation and scientific research have demonstrated that there is a clear relationship between elevated total cholesterol, low density lipoprotein cholesterol and blood lipid levels and heart disease. This is specifically important in coronary artery disease, ischemic heart disease, heart attack (angina), congestive heart failure and arrhythmia (irregular heart rhythm). Coronary artery disease is the most common cause of heart attack which is the leading cause of death in many countries. A survey concluded that by 2020, coronary artery disease will abound like an epidemic in India and that preventive measures should be taken on a war footing.

Coronary heart disease risk begins with cholesterol levels as low as 150-180 mg/dl, starting as early as 20 years of age. The relationship between elevated triglycerides and coronary heart disease is still for the most part unclear. Along with obesity, diabetes, high blood pressure and low HDL cholesterol levels, elevated triacylglycerol pose a greater risk of coronary heart disease and subsequent death. Use of hypolipidemic drugs that lower cholesterol and/or triacylglycerol often slow down progression of atherosclerosis and by this means reduce the incidence and deaths from coronary heart disease.

So an ideal drug is one which raises HDL cholesterol along with lowering of LDL cholesterol and at the same time is non-toxic to other organs even on long term treatment. In numerous cases where allopathic treatment fails, indigenous system of medication succeeds.
Eclipta alba was chosen for the studies because of its well known hepatoprotective nature under various conditions and hypolipidemic activity. Studies were undertaken to confirm its hypolipidemic nature so that it may provide a better alternative to clofibrate which is hepatotoxic on long term treatment.

The rat serves as a atherosensible model that develops some vascular pathologies, in particular atherosclerotic lesions similar to those observed in man. It is an interesting model for the study of mechanisms implied in the atherogenic process and its serious sequelae, and to some extent for establishing therapeutic strategies to prevent this pathology.

In the present work an attempt has been made to study the biochemical changes in blood, liver and heart tissues of rats taking place as a consequence to hypercholesterolemia.

The hypolipidemic, antiatherosclerotic effect of an extract of Eclipta alba (a herb) and a potent and widely used hypolipidemic drug clofibrate on the prevention of atherosclerosis and accumulation of lipids in tissues and their effect on ECG changes have been analysed.

The positive or negative effects of any drug cannot be fully explained unless administered to normal animals. So in the first set of experiments the non-toxic nature of Eclipta alba was analysed by administering it to normal healthy rats on a normal diet. In the next step, the biochemical changes like changes in lipid profile, liver and renal markers and changes in the
antioxidant status of tissues in hypercholesterolemic conditions were studied. The changes in hematological parameters were analysed.

_Eclipta alba_ showed hypolipidemic activity and was non-toxic to liver, heart and kidney and subsequently the effect of _Eclipta alba_ and clofibrate on simultaneous administration with high fat, high cholesterol diet was investigated to provide a clearer insight into the competence of the drugs in preventing the development of hypercholesterolemia induced atherosclerosis and the associated metabolic changes. _Eclipta alba_ and clofibrate were supplemented along with high fat diet (1% cholesterol in 10% ground nut oil) and fed to normal rats for 30 days. The observations are useful in assessing the usefulness of the drugs tested and their capacity to prevent the uptake and deposition of exogenous cholesterol in hyperlipidemic conditions.

_Eclipta alba_ has an edge over clofibrate since it is a proven hepatoprotective drug. Though both _Eclipta alba_ and clofibrate are effective in preventing the tremendous increase in serum triacylglycerols, total cholesterol, low density lipoprotein cholesterol and total lipids, _Eclipta alba_ showed improved,

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\frac{\text{Total cholesterol}}{\text{HDL cholesterol}} \quad \text{and} \quad \frac{\text{LDL cholesterol}}{\text{HDL cholesterol}} \quad \text{ratios}
\]

in high fat + high cholesterol fed rats.

On 30 days of high fat + high cholesterol diet, the metabolic pathways like glycolysis were altered in liver and heart while clofibrate and _Eclipta alba_
restricted the changes to a considerable degree. Hematological pattern also remained almost normal after clofibrate and *Eclipta alba* supplementation.

Hypercholesterolemic conditions lead to tissue hypoxia which uncouples oxidative phosphorylation, membrane permeability due to cholesterol load and also affects the membrane bound alkaline phosphatase and lysosomal enzyme like acid phosphatase which increase in blood due to tissue damage, repair or due to lipid accumulation altering the membrane composition.

*Eclipta alba*’s action in high fat diet fed animals in preventing tissue damage from oxidative stress and due to cholesterol accumulation by improving the antioxidant status is very promising. Atheromatous changes were observed in aorta and other organs of high lipid fed rats. But both *Eclipta alba* and clofibrate were effective in retarding atherosclerotic and pathological changes in liver, heart and aorta. ECG changes and histopathological studies also confirm the non-toxic and beneficial effect of *Eclipta alba* in alleviating the metabolic disorders prevalent in hyperlipidemic conditions.

In the present study some of the non-toxic, hypolipidemic, antiatherosclerotic, antioxidant and hepatoprotective effects of *Eclipta alba* have been established to a certain degree. This study is just a drop in the ocean. The present study on hypercholesterolemic condition induced alterations provide an insight into their role in atherogenesis, and *Eclipta alba*, under experimental conditions has yielded beneficial results. More detailed studies on the effect of *Eclipta alba* may prove fruitful.

"Better health may be only a dash and sprinkle away".