



ESTIMATION AND DETERMINATION OF ANTI-HYPERLIPIDEMIC ACTIVITY OF *Cuminum cyminum*

Ch. Madhava Reddy*, C.R.Akila, Ganesh Kumar Y, D Pranitha, D Phaneendra Pavan

Department of Pharmaceutical Sciences, Scient Institute of Pharmacy, Ibrahimpatnam, Hyderabad-501506, Telangana, India.

ABSTRACT

Hyperlipidemia is the condition in which it shows increased serum levels of total cholesterol (TC), LDL cholesterol, triglycerides or both triglycerides & TC. The term dyslipidaemia may include low levels of LDL cholesterol. Hyperlipidaemia leads to high risk of cardio vascular disease. Whereas, HDL cholesterol gives protection. CHD (coronary heart disease) risk increases and it shows the ratio of TC (total cholesterol to HDL cholesterol) rise. The study of investigation, the 70% ethanolic extract of *Cuminum cyminum seeds* has active constituents' alkaloids, flavanoids steroids and vitamins. From the study of investigation the extract of *Cuminum cyminum seeds* 250mg/kg show statically significant compare to the control group and reduces the body weight. After the bioanalysis of serum of the animals shows the significant effect or decreases in the levels of cholesterol, LDL, triglycerides compare to the hyperlipidemic rats. However statically significant value produces the active constituents of *Cuminum cyminum seeds*. So, the *Cuminum cyminum* have anti hyperlipidemic activity.

Keywords: *Cuminum cyminum*, Apiaceae, Hyperlipidemia.

INTRODUCTION

Hyperlipidemia is the condition in which it shows increased serum levels of total cholesterol (TC), LDL cholesterol, triglycerides or both triglycerides & TC. The term dyslipidaemia may include low levels of LDL cholesterol. Hyperlipidaemia leads to high risk of cardio vascular disease. Whereas, HDL cholesterol gives protection. CHD (coronary heart disease) risk increases and it shows the ratio of TC (total cholesterol to HDL cholesterol) rise. Primary hyper lipidaemia: In lipid metabolism, idiopathic hyperchylomicronemia shows defect which causes hypertriglyceridemia & hyperchylomicronemia. This is caused by defect in lipoprotein lipase activity or by surface apoprotein absence. Familial CII deficiency is the common disorder in miniature schnauzer, occurrence of familial hyperchylomicronemia in cats, while lipoprotein lipase activity shows autosomal recessive defect. In some families of doberman pinscher and rottweiler, it causes hypercholesterolemia. However high LDL cholesterol was shown. Secondary hyperlipidemia: When the meal which contain Fat are taken into GIT, chylomicron postprandial absorption take's place for 30-60minutes, then it shows increased triglycerides for 3-10hrs [1-4].

MATERIALS AND METHODS

Preparation of crude extract from *Cuminum cyminum seeds*

Hydroalcoholic extract of *Cuminum cyminum seeds* were prepared using 70% ethanol by cold maceration technique. The percentage yield of the extract was found to be 8.8% respectively.

Experimental animals

Male wistar rats weighing between 160 to 190 g was obtained from central animal house facility. The animals were maintained at normal temperature in 12 hr light and 12hr dark condition. The animals were divided into five groups each group contains the five animals.

Triton induced hyperlipidemic rats

Test and standard drugs are administered orally to fasted rats after a single intravenous injection of 225 mg Triton WR-1339/kg and serum cholesterol and triglycerides are measured 43 hr post-Triton [4].

Experimental design

- Group-1: Vehicle control
- Group-2: TRITON treated.
- Group-3: Triton+Atorvastatin (10mg/kg),
- Group-4: Triton+C.cyminum seed extract (150mg/kg)
- Group-5: Triton+ C.cyminum seed extract (250mg/kg)

Collection of blood

After 43hr, blood was collected by retro orbital sinus puncture, under mild ether anesthesia after 8 hr fasting and allowed to clot for 30 minutes at room temperature. Blood samples were centrifuged at 2500 rpm for 5 minutes. Serum was separated and stored at -20°C until biochemical estimations were carried out [2-6].

Biochemical Analysis

The Serum samples were analyzed spectrophotometrically for total serum of Total cholesterol (TC), triglyceride (TG) and high-density lipoprotein cholesterol (HDL-C) and LDL by using suitable assay kits [7].

RESULTS & DISCUSSION

Qualitative phytochemical studies confirms the presence of alkaloids, flavonoids, and steroids, vitamins.

Antihyperlipidemic studies

In the present study, the effects of the *EECC* on the induced hyperlipidemic rats and the results are shown in Tables.

Triton induced Hyperlipidemia

In Ayurvedic literature of India, different parts of this plant have been recommended as a remedy for various ailments like antidiabetic, anti-oxidant, anti hyperlipidemic, inflammatory properties, The present study has been undertaken to demonstrate the effect of *C.cuminum* seeds on rats fed with high cholesterol diet. Modern lipid lowering agents i.e., all statins (simvastatin, atorvastatin etc..) are expensive. The most important adverse effects of statins are liver and muscle toxicity. Other risk factors are hypothyroidism, renal insufficiency, hepatic dysfunction, advanced age and serious infections. In the present study, parameters of lipid profile were evaluated for all normal and hyperlipidemic rats. The extract shows the significant effect on cholesterol, LDL and triglycerides i.e extract decreases the cholesterol, LDL and triglycerides but no significant effect on HDL. The alcohol extract of seeds of *M. cyminum* induced a slightly increase in serum HDL-C levels hyperlipidemic models [7-9].

Table 1. Effect of *M. cyminum* seed Extract on TC, TGR, HDL, LDL and VLDL

Groups	TC	TGS	HDL	LDL	VLDL
Normal	65.14±6.21	79.42±6.73	26.39±4.11	29.72±2.89	16.84
Triton induced	196.32±10.63	119.8±6.19	19.46±3.78	140.6±9.11	22.92
Triton+Atorvastatin(10mg/kg)	66.59±3.72	75.13±10.82	28.60±5.33	38.51±4.54	15.05
Triton+ <i>C.cuminum</i> (150mg/kg)	76.45±10.56	81.37±5.48	20.13±2.17	66.20±5.01	17.26
Triton+ <i>C.cuminum</i> (250mg/kg)	81.23±5.84	90.5±7.65	22.71±3.40	52.64±6.02	18.13

Values are in mean ± SEM; Number of animals in each group = 6;

The *C.cuminum* extract (250mg/kg) showed the significant values in TC, TGR, LDL. P< 0.005

Table 2: Animals average body weight according to groups

Groups of animals Avg Body weight (gr)	0 days	3 days	6 days	9 days	12 days	15 days	18 days	21 days	25 days	35 days	45 days
normal	203.6	206.2	208.9	209.5	211.4	213.7	216.1	215.3	25.6	213.7	215.8
Fat induced	205.7	210.8	216.5	222.9	229.1	236.4	238.2	241.5	256.7	264.8	272.6
Standard	209.8	209.5	217.3	226.6	227.7	233.6	240.8	240.1	218.4	196.9	155.7
<i>C.cuminum</i>	207.1	211.3	221.2	225.7	229.8	237.9	239.6	220.7	224.9	215.6	210.4

CONCLUSION

The study of investigation, the 70% ethanolic extract of *Cuminum cyminum* seeds has active constituents' alkaloids, flavonoids steroids and vitamins. From the study of investigation, the extract of *Cuminum cyminum* seeds 250mg/kg show statically significant compare to the control group and reduces the body weight. After the bioanalysis of serum of the animals shows the significant effect or decreases in the levels of cholesterol, LDL, triglycerides compare to the hyperlipidemic rats. However statically significant value produces the active constituents of *Cuminum cyminum*

seeds. So, the *Cuminum cyminum* have anti hyperlipidemic activity.

CONFLICT OF INTEREST

Authors declare no conflict of interest.

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