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Research Article

**HYPOLIPIDEMIC ACTIVITY OF POLYHERBAL
FORMULATION IN TRITON WR-1339 INDUCED
HYPERLIPIDEMIC RATS**Satish Kalshetty S^{1*}, Qusro Bin Hassan², Dr. Mohd Rafiq³, Mukkram Ali⁴,
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Abstract:

Hyperlipidemia is the greatest risk factor of coronary heart disease. Currently available synthetic hypolipidemic drugs have been associated with number of side effects compare with herbal formulation, Anti Diabetic formulation was selected and the present study on anti-hyperlipidemic activity against triton induced hyperlipidemia in rats. Anti-diabetic formulation Administered at a dose of 200µg/kg (p.o) to the triton induced hyperlipidemic rats. Anti-diabetic formulation has shown a significant decrease in the levels of serum cholesterol, triglyceride, LDL, VLDL and significant increase in the level of serum HDL. Whereas fraction of anti-diabetic formulation decreased serum level of total cholesterol, LDL and increased the serum HDL cholesterol level.

Keywords: Polyherbal, Hyperlipidemia, LDL, VLDL, HDL.**Corresponding author:****Satish Kalshetty S,**

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INTRODUCTION:

Hyperlipidemia has been ranked as one of the greatest risk factors contributing to prevalence and severity of coronary heart diseases. Coronary heart disease, stroke atherosclerosis and hyperlipidemia are the primary cause of death. [1,2] Hyperlipidemia characterized by elevated serum total cholesterol, which may be due to accumulation of Triglycerides and fat in the lumen of coronary arteries and low density, very low density lipoprotein and decrease high density lipoprotein are the risk factor for coronary heart diseases. Hyperlipidemia associated lipid disorders are considered to cause the atherosclerotic cardiovascular disease [3].

The main aim of treatment in patients with hyperlipidemia is to reduce the risk of developing ischemic heart disease or the occurrence of further cardiovascular or cerebrovascular disease [4]. The consumption of synthetic drugs leads to hyperuricemia irritation, flushing, dry skin and abnormal liver function Medicinal plants are used for various research purposes. It has been reported that traditional systems have immune potential against various diseases [5,6] The primary disease may be treated baker's yeast anti-lipidemic drugs but the secondary type originating from diabetes, renal lipid nephrosis or hypothyroidism demands the treatment of original disease rather than hyperlipidemia [7]. Consumption of much fat may lead to the production of VLDL level increases, resulting in the formation of large amounts of LDL which may stick to the walls of the blood vessels if the quantity of HDL is insufficient, causing blockages for the normal flow of blood. Dietary fibres is highly recommended for disease prevention. The medicinal plants play a major role in anti hyperlipidemic activity [8].

India is richly endowed with a variety of natural resources with well-recorded and well-practiced knowledge of traditional herbal medicine. *Syzigium Cumine*, *Portulaca Quadrifida* and *Emblca Officianale* are commonly grown plants which are widely distributed in the tropical parts of India and Srilanka. According to their traditional values still many activities are yet to be proven scientifically. Therefore, this study was carried out to evaluate antilipidemic activity of selected polyherbal of ethanolic extract of *Syzigium Cumine*, *Portulaca Quadrifida* and *Emblca Officianale*.

MATERIALS AND METHODS:

Titon wr 1339 procured from Chemenova laboratories USA. Vehicle i.e. normal saline (0.9%), gum acacia 4% 2mg/kg b.w, of rats, statin crude powder of statin gifted from Straights

pharmaceuticals, Bangalore. Ant diabetic formulation which is obtained from local area of Kalaburagi, Karnataka. Sodium CMC which is procured from the department of Pharmaceutical Technology, MAM College of Pharmacy, Kalaburagi.

Wistar albino male rats weighing between 200-250gm were procured from animal house, Luqman college of Pharmacy, Kalaburagi, Karnataka were housed in Perspex cages, where the congenial temperature 27+1°C and 12hrs lights and dark cycles were maintained. The animals were allowed to acclimatize to the laboratory environment for 7 days and supplied with a standard pellet diet from Hindustan lever Ltd., Bangalore.

The animals were divided into five groups of six rats each. First the animals were given standard pellet diet, water *ad libitum* and orally administered with 5% CMC. Second group were given a single dose of triton was administered 400 mg/kg. After 72 hours of triton injection received a daily dose of 5% CMC (p.o) for 7 days. According to LD50 p.o. for inducing Hyperlipidaemia.

On the 8th week the blood samples were collected by rete orbital sinus puncture under mild ether anesthesia. The collected blood samples were centrifuged for 10 minutes at 3000 rpm. The serum samples were collected and it is used for various biochemical estimations.

Anti-diabetic formulation composed of the extracts of polyherbal medicinal plants (*Momordica charantia*, *Melia azadirachta*, *Tinospora cordifolia*, *Gymnema sylvestre*, *Encostemma littorale*, *Emblca officinalis*, *Eugenia jambolana*, *Cassia auriculata*, *Syzigium Cumine*, *Portulaca Quadrifida*, *Emblca Officianale* and *Curcuma longa*).

We have investigated for polyherbal formulation including *Syzigium Cumine*, *Portulaca Quadrifida* and *Emblca Officianale* for its possible antihyperlipidemic effect in hyperlipidemic rats.

Anti-diabetic formulation is an herbal anti-diabetic developed in India. The benefits of taking Anti-diabetic formulation are supposedly a lowering the lipid levels and protection against cardiovascular diseases. The supplement may also promote feelings of well-being and aid in boosting energy levels. Anti-diabetic formulation may possess antioxidant properties.

Polyherbal formulation including *Syzigium Cumine*, *Portulaca Quadrifida* and *Emblca Officianale* are traditionally used as a cooling and cleansing herb to treat many diseases. But scientists say that *Syzigium*

Cumine, Portulaca Quadrifida and Emblica Officianale has more health benefits, including effects for high lipid and high cholesterol levels, atherogenesis, high blood pressure, cardiovascular diseases, obesity, diabetes and anti-aging.

Polyherbal formulation has lipid-lowering and anti-atherogenic effects and they are natural lipid-lowering herb for the treatment of high lipid levels caused by diabetes. Polyherbal formulation can significantly reduce serum cholesterol, triglycerides, phospholipids and LDL levels, decrease the formation of aortic plaque, accelerate cholesterol and phospholipid excretion to feces. This indicates that the lipid-lowering effects may be involved with the interference with the absorption of cholesterol.

Polyherbal formulation has antioxidant and anti-aging effects. Scientific studies have found that many diseases can be treated such as cancers, aging, cardiovascular diseases, autoimmune diseases, shocks, and inflammation is due to the occurrence and development of lipid peroxidation (LPO). Polyherbal can improve the antioxidant capacity and protect vascular endothelial function. The main causes of aging is excessive free radicals, and high lipid peroxide (LPO) levels. The extract of Polyherbal formulation can inhibit pyrogallol and epinephrine auto oxidation, therefore it delays the senescence process.

As anti-aging effects. From the view point of traditional medicine, the above effects can still be explained from the blood cleansing and cooling effects of Polyherbal formulation. By cleansing the blood, making the blood less thick, and cooling down the over-heating body, you will have less chance to have the problems of high lipid and high cholesterol

levels, atherogenesis, high blood pressure, cardiovascular diseases, obesity and diabetes, or you can relieve the symptoms if you already have these problems. Without these health disorders, you can live longer.

Thus, we can say, Polyherbal formulation has essentially is a moderate blood coolant, purifier and thinner. This can explain all its ancient and modern uses from digestive tract ulcers and skin disorders to anti-atherogenic and antioxidant effects. The traditional medical systems do not use the words like “cholesterol”, or “atherogenesis” to describe diseases, they use the words like “too much blood”, or “too thick blood” to indicate the diseases. You may prefer to use one “language” than the other. But this is just personal preference.

It is easy to understand that, Polyherbal formulation has indirect effects for the above diseases (Atherogenesis, High Blood Pressure, Cardiovascular Diseases, Obesity, and Diabetes) in a long term use.

Biochemical analysis:

The serum were assayed for total cholesterol, triglycerides, , high-density lipoprotein (HDL), low-density lipoprotein (LDL), very low-density lipoprotein (VLDL). The serum cholesterol levels were determined by Zak’s method The triglyceride, serum HDL, LDL and VLDL was calculated by using standard method.

RESULTS AND DISCUSSION:

Lipid profile in serum indicates the increased triglyceride and cholesterol levels were significantly reduced by treatment of 200 mg /kg. LDL and VLDL levels were significantly increased in triton injected animals to control rats.

Table 1: Effect of Anti diabetic formulation on HDL, LDL and VLDL in serum of control and experimental rats Serum HDL level (mg/dl) results expressed in Mean \pm SEM (n=5)

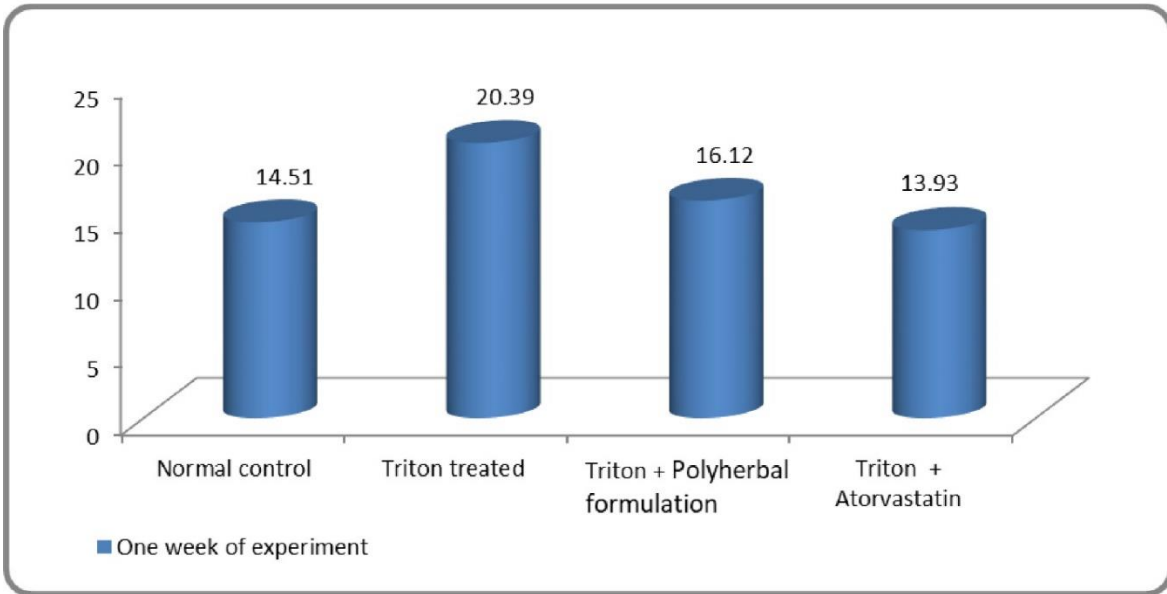
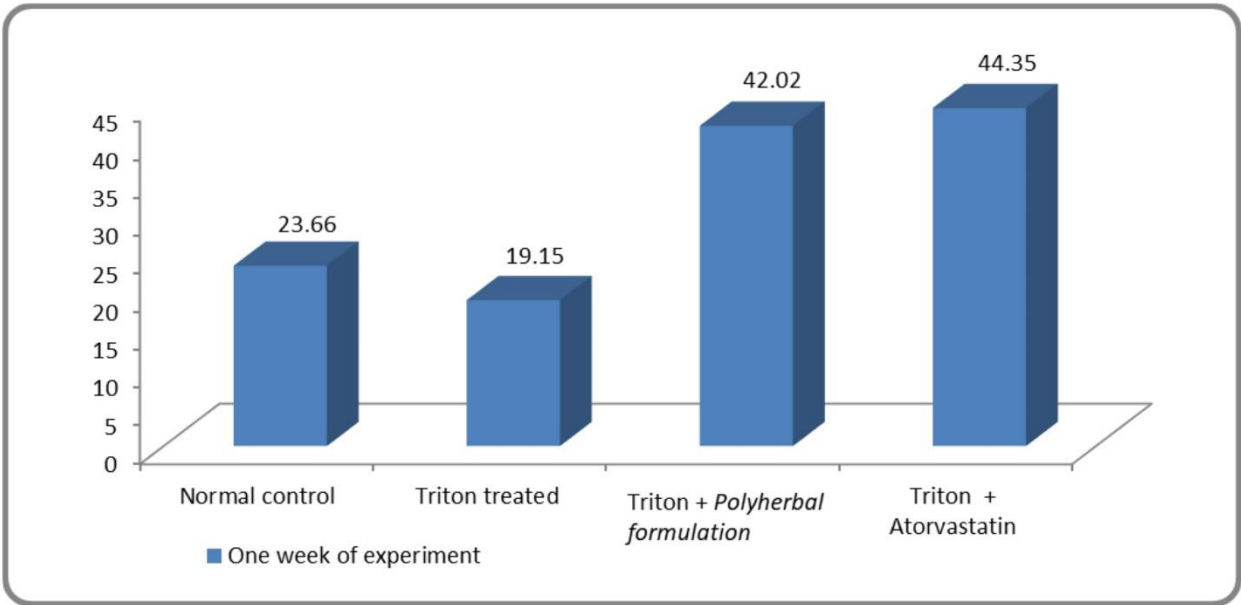
Group		Results (one week of experiment)
Group A	Normal control	23.66mg/dl
Group B	Triton treated	19.15mg/dl
Group C	Triton + Polyherbal formulation	42.02mg/dl
Group D	Triton + Atorvastatin	44.35mg/dl

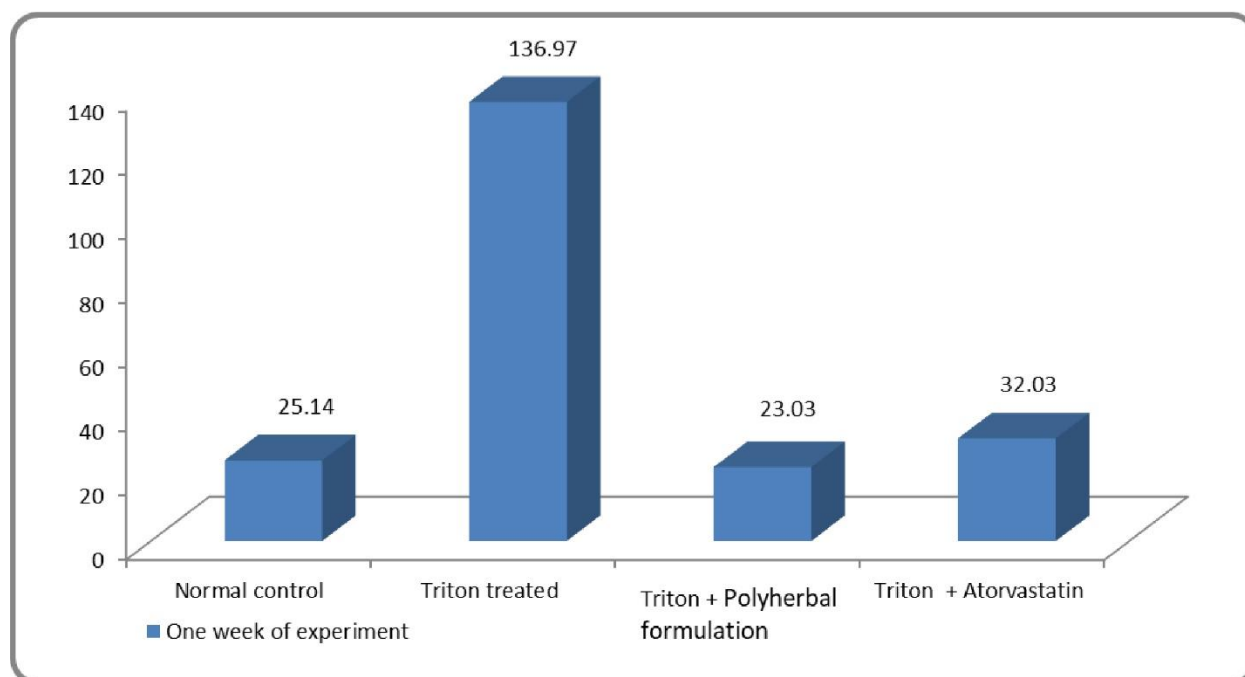
One-way ANOVA, $p < 0.01$

^a: $p < 0.01$ when compared with normal control group

^b: $p < 0.01$ when compared with hyperlipidaemic control group

(ANOVA followed by Dunnet’s multiple comparison test)





Serum LDL level (mg/dl) results expressed in Mean \pm SEM (n=5)

Group		Results (one week of experiment)
Group A	Normal control	25.14mg/dl
Group B	Triton treated	136.97 mg/dl
Group C	Triton + Polyherbal formulation	23.03 mg/dl
Group D	Triton + Atorvastatin	32.03 mg/dl

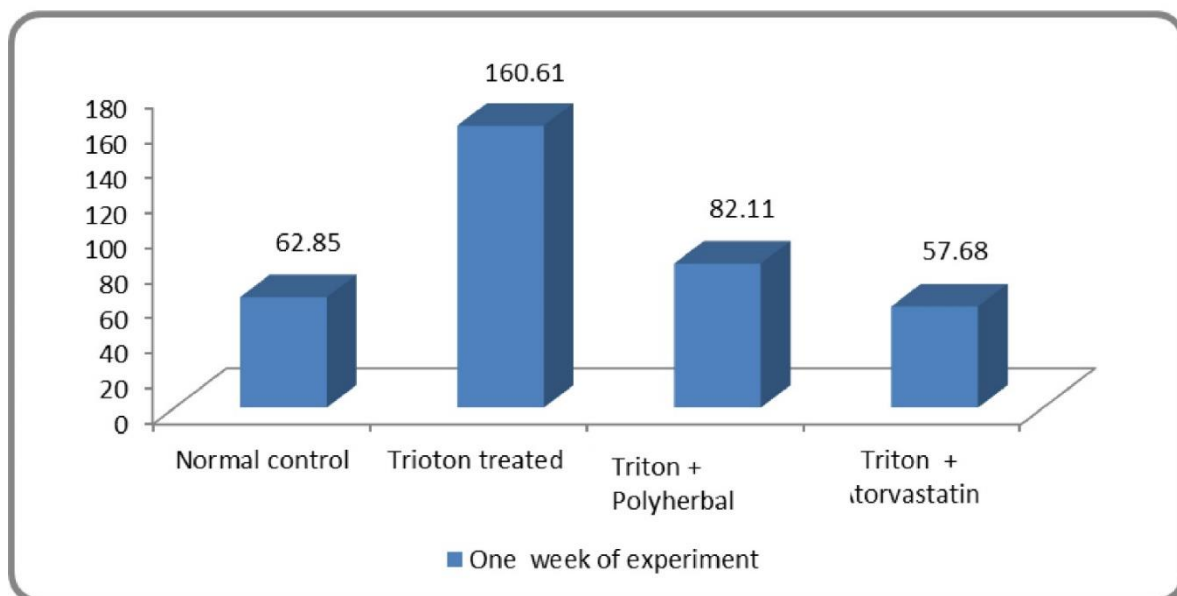
Serum LDL level (mg/dl) results expressed in Mean \pm SEM (n=5)

Serum VLDL results expressed in Mean \pm SEM (n=5)

Group		Results (one week of experiment)
Group A	Normal control	14.51 mg/dl
Group B	Triton treated	20.39 mg/dl
Group C	Triton + Polyherbal formulation	16.12vmg/dl
Group D	Triton + Atorvastatin	13.93 mg/dl

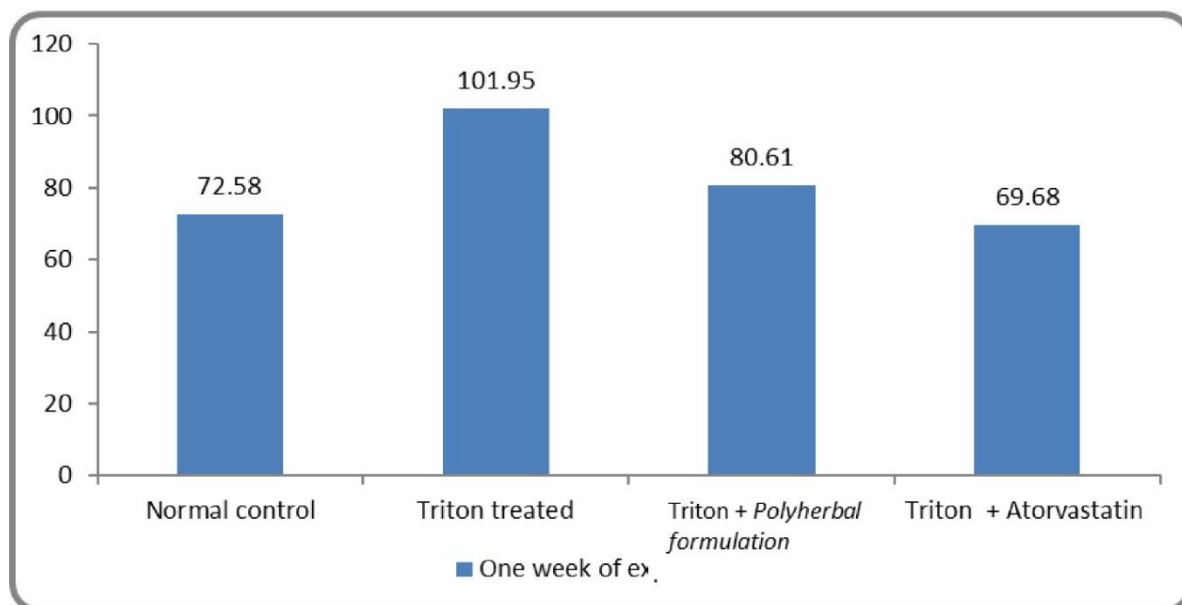
Total serum cholesterol (in mg/dl) results expressed in Mean \pm SEM (n=5)

Group		Results (one week of experiment)
Group A	Normal control	62.85mg/dl
Group B	Triton treated	160.61mg/dl
Group C	Triton + Polyherbal formulation	82.11mg/dl
Group D	Triton + Atorvastatin	57.68 mg/dl



Serum Triglyceride level (mg/dl) results expressed in Mean \pm SEM (n=5)

Group		Results (one week of experiment)
Group A	Normal control	72.58mg/dl
Group B	Triton treated	101.95mg/dl
Group C	Triton + <i>Polyherbal formulation</i>	80.61mg/dl
Group D	Triton + Atorvastatin	69.68mg/dl



The results which were shown for the Antidiabetic formulation markedly lowers the levels of serum cholesterol and VLDL. The decrease in cholesterol may indicate increased oxidation of mobilized fats This model is widely used for a number of different aims, in rats.

It has been used for screening natural or chemical hypolipidemic drugs Interestingly, the results of the present study show that Antidiabetic formulation produced a significant reduction in cholesterol level and also it reversed Triton induced Hypolipidemic Rats

DISCUSSION:

The present investigation shows that all triton induced rats displayed hyperlipidemia as shown by their elevated levels of serum and cholesterol, triglyceride, VLDL, LDL and also the reduction in the HDL level. It can be concluded that Ant diabetic formulation 200 mg kg⁻¹ treatment was effective in cholesterol TG, VLDL, LDL and HDL.

CONCLUSION:

Triton Wr-1339 has been widely used to block clearance of triglyceride-rich lipoproteins to induce acute hyperlipidemia in several animals This model is widely used for a number of different aims particularly, in rats it has been used for screening natural or chemical hypolipidemic drugs. Interestingly the results of the present study show that extract of Anti diabetic formulation produced a significant reduction in cholesterol level and also it reversed Triton induced hypolipidemic in rats The antihyperlipidemic activity of Antidiabetic formulation (200 mg kg⁻¹) against Triton Wr-1339 showed equipotent activity when compared to atorvastatin treated groups. Thus, our study showed that administration of polyherbal extract of 200mg kg⁻¹ of Antidiabetic formulation was more effective to manage hyperlipidemia. The active ingredients present here may recover the disorders in lipid metabolism noted in hyperlipidemic rates.

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