Original Research Paper

Volume-9 | Issue-5 | May-2019 | PRINT ISSN No 2249 - 555X

Ayurveda

ANTI HYPERLIPIDEMIC ACTIVITY OF SIDDHA FORMULATION OF KADUKKAI CHOORANAM IN WISTAR ALBINO RATS

Dr. Ajanthan. R* Department of Pothu Maruthuvam, GSMC, Palayamkottai, Tamil Nadu. *Corresponding Author

Dr. Manoharan. A Professor, Head of the Department, Department of Pothu Maruthuvam, GSMC, Palayamkottai, Tamil Nadu.

ABSTRACT Hyperlipidemia is a metabolic disorder due to various causes, the more prevalence of hyperlipedemia is 80% to 88% (Sarita.M.Kapgate,Abhijit.B.Patil., 2016) with approximately 40% - 48% is more incidence in middle age group. Hyperlipidemia is more in Hepatic disorder and other Endocrine diseases. Objective of the study is to evaluate the therapeutic efficacy and safety profile of Kadukkai Chooranam (KC). The high fat diet induced Wister albino rats , to evaluated by atherogenic index used this study. The results was recorded before and after administration of KC. The results showed KC is a good antihyperlipidemic,it was compared to treated groups and standard groups Is $p < 0.01$.The significant reduction in serum Total cholesterol, triglyceride, LDL, VLDL and moderate increase in HDL level after using Kc. Kadukkai Chooranam(KC) exhibited significant atherogenic index and percentage protection against hyperlipidemic rats. So, Kadukkai Chooranam is affordable cost, highly efficacy and more acceptable, which makes a good choice for lipid control.

KEYWORDS : Kadukkai Chooranam , Hypolipidemic Activity, HFD, Biochemical

INTRODUCTION:

Many people with diabetes have been produced risk factor in atherosclerotic heart disease and diabetic related complications. It may produce high blood pressure, excessive body weight and high blood glucose levels. Dyslipidemia further raises risk of Ischemic heart disease, Peripheral vascular disease and Stroke .In the clinical practice, dyslipidemia patients were associated with diabetes and other non communicable disease ,few patients have suffering in familial hypertriglycedemia. The following drugs available to manage dyslipidemia, statins is a first drug of choice to control hyperlipedemia,folate ,nicotinic acid and bile sequentance are next line of treatment , the above drugs are used long period they have produced Rhabdomylosis , muscular disease and hepatobillary disease .So, newer drug is very essential to treat hyperlipedemia (D.J. Ecobichon,.1997).The following physiological mechanisms have occurred in high cholesterol and diabetic state. The formation and accumulation of advanced glycation products, increased oxidative stress, activation of proteinkinase C pathway, increased activity of hexosamine pathway and vascular inflammation and the impairment of insulin action in the vascular tissue can produced complications.(A.E. Ahire, et al.,2005)

The present study, the effect of siddha formulation of Kadukkai chooranam(KC) is changes in Lipid profiles and blood sugar level.(Gajenda Kumar, et al.,2013)

MATERIALS AND METHODS

The "Kadukkaichooranam" is mentioned in several Siddha literature "Gunapadam Mooligaivaguppu Part -1"is indicated for Mega disorder (Diabetes), Burning sensation of upper and lower limbs(Poly neuropathy), liver diseases and anaemia. In various journal reviwed Terminalia chebula is an Antioxidant (SarmisthaSaha etal,2014), AntiHyperglycemic(NaiamoluKotesswaraRao, 2006)Antimicrobial (Golam MOSTAFA.M et al. 2011) actvities.

The HFD induced Wister albino rats weighted 180±10 animals were used in this experiments. The rats were maintained in accordance with guidelines of the national institute of nutrition, Indian council of medical research, Hyderabad, India and study approved given by Institutional animal ethical committee.

Experimental procedure:

All the animals were weighed and divided into five groups each of six animals,totally 30 rats were used. The details are given below,

Group I : Normal control.

Group II : Cholesterol control. Fed ***cholesterol*** at a dose of400mg/kg body weight for 30 days.

Group Ill :fed cholesterol as in group II and ***Atorvastatin***1mg/kg body weight from days 15 to day 30.

Group IV :fed cholesterol as in group II and siddha formulation Kadukkai chooranam(KC) at a dose of 100mg/kg body weight from days 15 to day 30.

Group V : fed cholesterol as in group II and siddha formulation Kadukkai chooranam(KC) at a dose of 200mg/kg body weight from days 15 to day 30.

At the end of 30 days all the rats were sacrificed, blood was collected and serum was obtained by centrifugation. The serum samples were used for various biochemical studies. The results is correlated by Statistical analysis, ANOVAs and Newmankeuls multiple test. Atherogenic index is followed in study.

Atherogenic index (AI) and LDL-C/HDL-C ratio

- The AI was calculated by the following formula
- AI = (total cholesterol – HDL-C)/HDL-C
- LDL-C/HDL-C ratio was calculated as the ratio of plasma LDL-C to HDL-C Levels

Table 1: Effect of siddha formulation kadukkai chooranam in various Lipid levels Statistical analysis

Table 1: Effect on siddha formulation kadukkai chooranam **in Lipid Profile**

GROUPS	Total cholesterol (Mg/dl)	Triglycerides (mg/dl)	HDL (mg/dl)	LDL (mg/dl)	VLDL (mg/dl)	AI	LDL/HDL
Normal Control	49.70 ± 1.70	57.10± 0.90	26.45 ± 1.18	14.30 ± 0.76	30.86 ± 1.05	0.87 ± 0.50	0.54 ±
Cholesterol Control	115.40 ± 1.56$^{**(a)}$	161.5 ± 1.68$^{**(a)}$	11.90 ± 0.65$^{**(a)}$	30.96 ± 1.32$^{**(a)}$	13.05 ± 0.70$^{**(a)}$	8.51 ± 1.33$^{**(a)}$	2.60$^{**(a)}$
Standard Control	72.60± 1.42$^{**(b)}$	82.10 ± 1.80$^{**(b)}$	21.5 ± 0.40$^{**(b)}$	20.05 ± 0.76$^{**(b)}$	24.85 ± 0.76$^{**(b)}$	2.34 ± 2.33$^{**(b)}$	0.92$^{**(b)}$
Treatment control	92.86 ± 1.24$^{**(b)}$	114.40 ± 1.96$^{**(b)}$	17.0 ± 0.50$^{**(b)}$	25.25 ± 0.60$^{**(b)}$	17.84 ± 0.42$^{**(b)}$	4.39 ± 1.48$^{**(b)}$	1.46$^{**(b)}$
Treatment control	83.85 ± 0.94$^{**(b)}$	96.5 ± 1.10$^{**(b)}$	20.30 ± 1.28$^{**(b)}$	22.12 ± 0.72$^{**(b)}$	21.25 ± 0.52$^{**(b)}$	3.13 ± 0.24$^{**(b)}$	1.08$^{**(b)}$

After the treatment TC, Triglycerides &LDL also decreased like stranded control group, same time HDL also increased .Values are expressed as Mean ± SEM.Values were find out by using ONE WAY ANOVA followed by Newman Keul's multiple range tests.** (a) values were significantly different from normal control at P< 0.01.** (b) Values were significantly different from hyperlidemic control at P< 0.01. In Table no 1. The end of result found, after the treatment of Kadukkai choornam ,TC, Triglycerides &LDL was decreased in treatment control (Group IV,V),it was compared Group I,II and III standard control .

DISCUSSION

The reduction of plasma total cholesterol was associated with a decrease in its LDL fraction which is a major, potentially modifiable risk factor of cardio vascular disease and the target of drug. Many suggest that the cholesterol lowering activity of this product appears to be due to the enhancement of LDL – C catabolism through hepatic receptors (C.Vijaya, et al., 2009).In addition siddha formulation kadukkai chooranam showed protective action which is reported to have a preventive function against atherogenesis since an independent inverse relationship between blood HDL – C levels and cardio vascular risk incidence is reported.(T.Chidambaram, et al.,2007) .The mechanism of reduced hyperlipidemia is the enhancement of Lecithin Cholesterol Acyl Transferase (LCAT) and inhibition of Hepatic Triglyceride Lipase (HTL) on HDL which may lead to a rapid catabolism of blood lipids through entero hepatic tissues. (A.E. Ahire, et al., 2005),(L.Anila, et al.,2002). It reported that triglycerides (M.A.Austin, et al.,1984) layed a key role in the regulation of lipoprotein interaction to maintain normal lipid metabolism. Indeed, the elevated plasma TG levels were associated with an increased incidence of coronary artery disease . More over these higher plasma TG levels have been attributed mainly to increase population of small, dense LDL deposits which are very atherogenic and enhanced cholesteryl ester mass transfer from apolipoprotein containing lipoproteins (VLDL , LDL and TG) has also been proposed to be major determined of cholesteryl esterification, its transfer and HDL remodeling in human plasma.

Administration of siddha formulation Kadukkai chooranam (KC) is provides a beneficial action on rat lipid metabolism with regard to the reduction of AI. Infarct, the AI was decreased in all treated groups. Similar results were reported by others when studying the hypolipidemic effects of natural products. This ameliorative action was due to the plasma lipid lowering activity of different constituents of the formulation.

RESULTS

Table I was showed, Kadukkai chooranam controls the levels of TC, Triglycerides, HDL, LDL and VLDL in experiment rats . Serum of hyperlipidemic rats showed significantly decreased levels of Cholesterol, Triglycerides, LDL and increased level of HDL , when compared with normal Rats. In rats treated with both doses of siddha formulation Kadukkai chooranam (KC) and Atorvastatin there was significant decreased in the content of cholesterol, TGs, LDL, and VLDL and increases HDL, when compared with cholesterol control rats .

It is desirable to have higher plasma HDL and lower LDL-C to prevent atherogenesis, since there is a positive correlation between an increased LDL-C/HDL-C ratio and the development of atherosclerosis. Again ,the administration of siddha formulation KC significantly suppress the higher value of LDL-C/HDL-C ratio showing the beneficial effect of this formulation in preventing atherosclerosis incidence. The siddha formulation kadukkai chooranam showed an improvement of the cardio vascular risk level by decrease of AI in the treated group by more than 73% and 63%($P<0.01$),when compared the cholesterol control group.

CONCLUSION

Hyperlipidemia is considered to be a major risk factor for atherosclerosis and inhibited atherosclerotic plaque formations in coronary artery. The anti hyperlipidemic effect of siddha formulation Kadukkai chooranam(KC) is control (or) reduced lipid profile and inhibited the risk of coronary vascular disease, comparatively other system of medicine, KC is an affordable cost, flexible and easily available.

ACKNOWELDGEMENT

Sincere acknowledge to my Guide and Supervisor of PG Department of Pothu Maruthuvam, Govt. Siddha medical College, Tirunelveli. I thank you to all who were support to complete this research work successfully.

REFERENCES

1. D.J. Ecobichon,. The basis of toxicology testing. 2nd ed. New York: CRC press,(1997)
2. A.E. Ahire, K.S. Laddha, Indian drugs., 42(8),545-546 (2005)
3. C.Vijaya, M.Ramanathan,B.Suresh, Ind. J. Expt. Bio., 47, 182 – 185 (2009)
4. A.E. Ahire, K.S. Laddha, Indian drugs., 42(8),545-546 (2005)
5. T.Chidambaram, C. Kumarappan Mendal, J. Cell. and Molecular Biology., 6 (2):175 – 187(2007)
6. F.Khanna, R. Rizvi Chandar, J. of Ethnopharmacology., 82:19 – 22.(2002)
7. L.Anila and NR. Vijayalaksmi, J of Ethnopharmacology., 79: 81 – 89.(2002)
8. M.A.Austin, J.E. Hokenson, current opinion in lipidology., 5, 395 – 403 (1984)
9. M.Guerin Le Goff, Thrombosis and Vascular Bio., 21, 282 – 289 (2001)
10. T.Murakai, R. Longhli, Thrombosis and Vascular Bio., 15, 1828 – 1891(1995)
11. Gajendra Kumar,Amita Srivastava,Yogendra Kumar Guptha,Hypo lipedemic activity of Ayurveda medicine,Journal of ayurvedic & integrative medicine/July- September 2013
12. Murugesamudaliar, GunapadamMooligaivaguppu, 2st Edition, Published by Department of Indian Medicine and Homeopathy, 2016.
13. Nadkarni, K.M., 1976. Indian Material Medica. Popular PrakashanPvt. Ltd., Bombay, pp: 1202-1211.
14. Sarita.M.Kapgate*,Abhijit.B.Patil,. World journal& Therapeutic potential 0f Termanalia chebula.wjpmr,2016,2(6),226-234
15. D.J. Ecobichon,. The basis of toxicology testing. 2nd ed. New York: CRC press,(1997)