ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF PHARMACEUTICAL RESEARCH AND LIFE SCIENCES

Published by ScienzTech Publication Journal Home Page: www.scienztech.org/ijprls

In-vivo evaluation of lipid lowering ability of *Chloris paraguaiensis* extracts

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Article History:

Received on: 11 Feb 2019
Revised on: 12 Mar 2019
Accepted on: 26 Mar 2019
Published on: 08 Apr 2019

Volume: 7 Issue: 2

Keywords:

Chloris,
lipidemia,
Dose dependant,
Extracts

ABSTRACT

Hyperlipidemia is the immediate results of the excessive fat intake in food. This results in the elevated levels of cholesterol and triglycerides in the blood. This leads to heart conditions like CAD, hypertension, congestive heart failure as risk factors which can be lethal. There are many drugs to treat and control the lipids levels in the body. These drugs are either designed to prevent LDL accumulation and VLDL synthesis. Some drugs also lower the elevated levels of saturated lipids in the body. But many drugs are known to cause side effects and adverse effects; therefore, alternatives to the drugs are the subjects for current investigations. Herbs and medicinal plants are used as treatment sources for many years. They have been used in the Indian medical systems like Ayurveda, Siddha etc. As the application of herbs in the treatment is growing, there is an urgent need for the establishment of Pharmacological reasoning and standardization of the activity of the medicinal plants. *Chloris paraguaiensis* Steud. is Poyaceae member that is called locally as Uppugaddi. Traditionally it is used to treat Rheumatism, Diabetes, fever and diarrhoea. The chemical constituents are known to have anti-oxidant properties and most of the anti-oxidants have anti-hyperlipidemic activity too. Since the plant has abundant flavonoid and phenol content, the current research focusses on the investigation of the anti-hyperlipidemic activity of the plant Chloris extracts. Extracts of Chloris at 200mg/kg showed a comparably similar anti hyperlipidemia activity to that of the standard drug. The extracts showed a dose based increase in the activity at 100 and 200mg/kg body weight.

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DOI: https://doi.org/10.26452/ijprls.v7i2.1199

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INTRODUCTION

Lipids are high energy sources of the human body. They are present in most of the foods that are consumed and are serving as an excellent dietary source of energy. But the erratic use of the lipids and oils in the diet is causing the increase of concerns of health problems in the body. Conditions like hyperlipidemia are the immediate results of the excessive fat intake in food. This results in the elevated levels of cholesterol and triglycerides in the blood. This leads to heart conditions like CAD, hypertension, congestive heart failure as risk factors which can be lethal. Hyperlipidemia is also a result of improper metabolism of lipids in the body because of lack of enzymes or imbalance in the digestive cycles in the tract. As the disease leads to various other disorder, it is to be treated with caution and immediate concern. There are many evaluative parameters to analyze the extent of hyperlipidemia and the retrospec-

tive causes of the condition.

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Plants are the sources of various chemical constituents that are potent against many pathogens and to treat multiple diseases. They also gave many chemical moieties that are used as source leads for the production of many drugs in the present world. So the plants serve as the cheapest and best alternatives for the side effects causing synthetic drugs [1].

Chloris paraguaiensis Steud., is Poyaceae member that is called locally as Uppugaddi. Traditionally it is used to treat Rheumatism, Diabetes, fever and diarrhoea. The active part of the plant that is used is a leaf. Usually, the inflorescence is allergenic. Major chemical constituents that are extracted and isolated from the plant are Chlorogenic acid, Kaempferol, Rutin, Quercetin, Theobromine etc. [2].

The chemical constituents are known to have anti-oxidant properties and most of the anti-oxidants have anti-hyperlipidemic activity too. Since the plant has abundant flavonoid and phenol content, the current research focusses on the investigation of the anti-hyperlipidemic activity of the plant Chloris extracts [3].

METHODOLOGY

Collection and Preparation of extracts

Whole plants of Chloris were collected from the highway region of buja Nellore, Nellore. They were appropriately authenticated and the herbarium sample is submitted in the college library. The plants were shade dried for two days at ambient temperature and climate in the open air. The dried plant was collected and ground to a fine powder and sieved thoroughly. This was extracted using ethanol, adopting a cold maceration method. The mixture was stirred occasionally for every 6hr. After the extraction, the extract was filtered and the filtrate was evaporated to yield a thick extract which gave 19.02%w/w. This was stored in a desiccator for further usage and the activity was estimated in two doses, 100mg/kg and 200mg/kg body weight [4].

Lab animals

Wistar albino rats were used for the investigation of the hyperlipidemic activity. The animals weighed 140-160gm were brought from a local supplier and were let to inhabit in the laboratory conditions for two days before the start of experiments. The animals were given free access for food and water. They were divided into five groups, with six animals in each group. Group 1 was a normal group which did not receive any treatment but were only given normal saline of 0.9% of 1ml. Group 2 is the control group that received only induction of hyperlipidemia without the usage of any drugs or extracts. Group 3,4 and 5 received standard atorvastatin at a dose of 10mg/kg bodyweight, plant Extracts at a dose of 100mg/kg and 200mg/kg respectively. The hyperlipidemia is induced in two methods [5].

Triton induced hyperlipidemia method

This method uses drug Triton to induce hyperlipidemia in groups 2-5 (Yash Prashar, 2010). Triton is given as IV injection at a dose of 220mg/kg to the animals half an hour before the treatment with extracts and drugs. After the induction, the animals were not deprived of food and water. Triton was given to the animals through IV injection 30mins before the administration of the drugs and extracts. The animals were given extracts and drugs for 45 days one dose per week. Weights were noted before and in the regular intervals of the experiments.

High-fat diet-induced hyperlipidemia method

This method used cholesterol as a hyperlipidemic agent. Feed was mixed with cholic agent 50mg/kg and cholesterol 400mg/kg and coconut oil. This was fed to the animals for 20 days and the drugs and extracts were given to the animals after five days of feeding the rats with a high-fat diet. The extracts were given to the rats for weekly once a dose.

Biochemical estimations

On the last day of the study, the animals were given either as anaesthesia and the blood was drawn from the rotary plexus. The serum was separated from blood and the biochemical parameters like Total Cholesterol-TC, Triglycerides-TG, Low-Density Lipids-LDL, High-Density Lipids-HDL and Very Low-Density Lipids-VLDL were estimated suing standard procedures as per.

Table 1: Body weight comparison in animals in both the methods

Groups	0days	6days	12days	18days	24days	30days	36days
Normal	140.68	141.24	141.53	141.97	142.09	142.35	142.44
Triton	143.29	149.61	155.90	159.87	163.75	168.66	175.08
High Fat	142.06	149.63	158.21	165.35	170.40	176.71	181.03
Atorvastatin	141.99	147.11	142.08	138.65	136.74	132.02	130.55
Extract 200mg/kg	142.32	148.56	147.20	145.28	142.64	138.04	134.58
Extract 100m/kg	140.69	146.87	149.57	146.12	144.55	140.29	140.57

Table 2: Lipid profile in Triton induced method

Groups	TC's	TG's	HDL	LDL	VLDL
Normal control	64.36± 6.57	78.69± 6.57	25.32± 3.34	28.62±2. 19	15.34± 1.77
Triton	195.35± 11.85	118.57± 6.84	18.56± 3.74	130.46± 9.11	21.28± 1.46
Triton+ standard	67.69± 3.90	74.68± 10.69	27.69± 4.54	39.62± 4.05	16.48± 1.58
Extract-100mg/kg	76.59± 10.20	80.97± 5.72	20.27± 2.78	665.48± 4.76	18.47± 1.34
Extract-200mg/kg	80.47± 5.75	91.02± 7.19	25.23± 2.91	51.31± 5.22	17.29± 1.33

Table 3: Lipid profile in High-fat diet-induced method

Groups	TC's	TG's	HDL	LDL	VLDL
Normal control	91.36± 1.58	61.45± 1.57	41.57± 1.42	27.58± 1.54	14.89± 1.45
High fat	231.09± 10.04	128.69± 2.46	21.32± 2.64	37.82± 2.23	27.49± 2.45
Standard	91.575± 1.69	65.17± 2.72	39.57± 2.75	28.74± 2.08	15.07± 1.64
Extract-200mg/kg	122.58± 14.57	71.31± 1.13	35.45± 3.59	31.61± 1.74	14.27± 1.98
Extract-100mg/kg	193.27± 10.23	95.82± 3.46	24.61± 1.52	34.90± 1.69	18.36± 2.86

RESULTS

The extracts were investigated for the anti-hyperlipidemic activity in two methods, Triton method and high-fat diet-induced method.

Table 1 gives us the reading of weight variations with the fat induction to the experimental animals. The weights were increased to almost 50% in the untreated group with fat induction and were controlled by the administration of extracts and standard drug, atorvastatin. The data were given in Table 2 for the Triton induced method. The data shows a specific elevation in the lipid levels for the Triton induced group. But with the administration of the extract and drugs, the lipid levels were lowered significantly within five days of administration. There was the remarkable elevation of HDL lipids in the blood with the dose of extracts which is comparable to the standard drug.

Table 3 gives the data of high-fat diet-induced hyperlipidemia study of theChloris extracts. The data was similar to that of the Triton method. The extracts showed a better activity which is similar compared to the standard. From the information, it is clear that Chloris possesses the anti hyperlipidemia activ-

ity, which is comparable to the standard drug atorvastatin in both the methods, Triton induced hyperlipidemia and high-fat diet-induced hyperlipidemia method.

CONCLUSION

Extracts of Chloris at 200mg/kg showed a comparably similar anti hyperlipidemia activity to that of the standard drug. The extracts showed a dose based increase in the activity at 100 and 200mg/kg body weight.

CONFLICT OF INTEREST

Authors declared no conflict of interest.

FUNDING SUPPORT

None

ACKNOWLEDGEMENT

The authors are thankful to all who have extended their constant support for the completion of the work.

REFERENCES

[1] Shiddamallayya N, Yasmeen A, Gopakumar K. Medico-botanical survey of Kumar parvatha Kukke Subramanya. Indian Journal of Traditional Knowledge. 2010;9(1):96–99.

[2] Soudahmini E, Kumar PS, Ganesh MS, Brindha VS, Panayappan L, Divakar MC. Herbal remedies of Madugga tribes of Siruvani forest. South India Phytomedica. 2003;4(6):492–501.

[3] Prashar Y, Venkataraman S. Evaluation of Ethanolic Extract of Bauhinia Variegata Linn. In High Fat Diet Induced Obesity In Rats. International Journal of Phytopharmacology. 2010;1(2):103–108.

[4] Burris KP, Harte FM, Davidson PM, Jr CNS, Zivanovic S. Composition and Bioactive Properties of Yerba Mate (llex paraguariensis A. St.-Hil.): A Review. Chilean journal of agricultural research. 2012;72(2):268–275. Available from: 10.4067/s0718-58392012000200016.

[5] Venkidesh R, Mandal SC, Pal D, Lakshmi SM, Saravanakumar A. Anti-diabetic activity of Smilax chinensis (L.) in alloxan induced diabetic rats. International Journal of Pharmacy and Pharmaceutical Sciences. 2010;1(2):68–73.

Cite this article: CH Pavani. ***In-vivo* evaluation of lipid lowering ability of *Chloris paraguaiensis* extracts**. Int. J Pharm. Res. Life Sci. 2019; 7(2): 21-24.