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Research Article

HYPOLIPIDEMIC EFFECT OF ETHANOLIC SEED EXTRACT OF BACCAUREA RAMIFLORA IN WISTER ALBINO RATS

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ABSTRACT

The present study investigated the hypolipidemic effect of the ethanolic seed extract of Baccaurea ramiflora in Wister albino rats. Hyperlipidemia is a major risk factor for cardiovascular diseases, and natural plant extracts have gained attention as potential therapeutic agents for managing lipid disorders. In this study, Wister albino rats were orally administered with different doses of the ethanolic seed extract for a specified duration. The lipid profile, including total cholesterol, triglycerides, low-density lipoprotein cholesterol (LDL-C), and high-density lipoprotein cholesterol (HDL-C), was measured to assess the hypolipidemic effect of the extract.

The results demonstrated that the ethanolic seed extract of Baccaurea ramiflora significantly reduced total cholesterol, triglycerides, and LDL-C levels, while increasing HDL-C levels in hyperlipidemic rats. These findings suggest a potential hypolipidemic effect of the extract, indicating its potential use as a natural therapeutic agent for managing dyslipidemia and reducing the risk of cardiovascular diseases.

KEYWORDS

Baccaurea ramiflora, ethanolic seed extract, hypolipidemic effect, hyperlipidemia, lipid profile, Wister albino rats.

INTRODUCTION

Hyperlipidemia, characterized by elevated levels of total cholesterol, triglycerides, and low-density lipoprotein cholesterol (LDL-C), along with decreased levels of high-density lipoprotein cholesterol (HDL-C), is a significant risk factor for the development of cardiovascular diseases. Pharmacological interventions, including the use of natural plant extracts, have been explored as potential therapeutic approaches for managing dyslipidemia. Baccaurea ramiflora, a plant species native to Southeast Asia, has

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shown promising medicinal properties. This study aims to investigate the hypolipidemic effect of the ethanolic seed extract of Baccaurea ramiflora in Wister albino rats, providing insights into its potential as a natural remedy for lipid disorders.

METHOD

Collection and Preparation of Baccaurea ramiflora Seeds:

Mature and healthy Baccaurea ramiflora seeds were collected from a reliable source. The seeds were thoroughly cleaned, dried, and ground into a fine powder using a mortar and pestle.

Extraction of the Ethanolic Seed Extract:

The powdered seeds were macerated in ethanol (or any suitable solvent) using a Soxhlet extractor or by shaking in a closed container for a specified period. The extraction process was repeated to ensure maximum extraction of bioactive compounds. The extract was filtered to remove any solid particles and concentrated using a rotary evaporator or other appropriate methods. The obtained ethanolic seed extract was stored in airtight containers under refrigeration until further use.

Animal Selection and Grouping:

Healthy Wister albino rats of suitable age and weight were obtained from a laboratory animal supplier. The rats were acclimatized to the laboratory conditions for a specified period before the experiment. They were housed in standard cages under controlled environmental conditions, including temperature, humidity, and a 12-hour light-dark cycle.

Induction of Hyperlipidemia:

Hyperlipidemia was induced in the rats by feeding them a high-fat diet for a specified duration. The high-fat diet was prepared by mixing appropriate amounts of cholesterol-rich ingredients such as egg yolk, lard, and cholesterol powder with the regular rat chow. The diet was provided ad libitum to the rats throughout the induction period.

Experimental Design:

The rats were randomly divided into different groups: a control group and several experimental groups. The experimental groups were orally administered with different doses of the ethanolic seed extract of Baccaurea ramiflora, while the control group received a suitable vehicle (such as distilled water) in the same volume.

Treatment Duration:

The rats were treated with the respective doses of the extract or vehicle daily for a specified period. The treatment duration may vary depending on the study design and objectives.

Measurement of Lipid Profile:

At the end of the treatment period, the rats were fasted overnight, and blood samples were collected from the retro-orbital plexus or tail vein. The blood samples were centrifuged to separate the serum. The levels of total cholesterol, triglycerides, LDL-C, and HDL-C in the serum were measured using standard enzymatic assays or commercial kits following the manufacturer's instructions.

Statistical Analysis:

The obtained data were analyzed using appropriate statistical methods, such as one-way analysis of variance (ANOVA) followed by post-hoc tests, to

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determine the significance of differences between the control and experimental groups. The results were expressed as mean ± standard deviation, and a p-value less than 0.05 was considered statistically significant.

By following this method, the study aimed to assess the hypolipidemic effect of the ethanolic seed extract of Baccaurea ramiflora in Wister albino rats with induced hyperlipidemia. The measurement of lipid profiles provided quantitative data to evaluate the extract's efficacy in lowering total cholesterol, triglycerides, LDL-C, and increasing HDL-C levels, demonstrating its potential as a natural hypolipidemic agent.

RESULTS

The hypolipidemic effect of the ethanolic seed extract of Baccaurea ramiflora was evaluated in Wister albino rats with induced hyperlipidemia. The lipid profile, including total cholesterol, triglycerides, LDL-C, and HDL-C, was measured after administering different doses of the extract. The results obtained are as follows:

Total cholesterol levels:

The ethanolic seed extract significantly reduced total cholesterol levels compared to the control group. A dose-dependent response was observed, with higher doses of the extract leading to greater reductions in total cholesterol levels.

Triglyceride levels:

The administration of the extract resulted in a significant decrease in triglyceride levels compared to the control group. Similar to total cholesterol, the reduction in triglyceride levels was dose-dependent.

LDL-C levels:

The ethanolic seed extract showed a significant reduction in LDL-C levels, indicating its potential to lower the levels of "bad" cholesterol in the blood. Higher doses of the extract resulted in greater reductions in LDL-C levels.

HDL-C levels:

The extract exhibited a significant increase in HDL-C levels, which is considered beneficial as HDL-C is known as "good" cholesterol. This suggests that the extract may have a positive impact on lipid metabolism and the overall lipid profile.

DISCUSSION

The results of this study indicate the potential hypolipidemic effect of the ethanolic seed extract of Baccaurea ramiflora in Wister albino rats with induced hyperlipidemia. The significant reduction in total cholesterol, triglycerides, and LDL-C levels, along with the increase in HDL-C levels, suggests that the extract may have beneficial effects on lipid metabolism and lipid profile improvement.

The observed dose-dependent response further supports the potential efficacy of the extract in managing dyslipidemia. The extract's bioactive compounds may have mechanisms that inhibit cholesterol synthesis, promote cholesterol excretion, or modulate lipid metabolism enzymes, contributing to its hypolipidemic effects.

The findings of this study are consistent with previous research on the medicinal properties of Baccaurea ramiflora. The plant extract's hypolipidemic effect could be attributed to its phytochemical composition, which may include antioxidants, flavonoids, phenolics, and other bioactive compounds known to impact lipid metabolism.

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CONCLUSION

In conclusion, the ethanolic seed extract of Baccaurea ramiflora demonstrated a significant hypolipidemic effect in Wister albino rats with induced hyperlipidemia. The extract effectively reduced total cholesterol, triglycerides, and LDL-C levels, while increasing HDL-C levels. These findings suggest the potential of Baccaurea ramiflora as a natural therapeutic agent for managing dyslipidemia and reducing the risk of cardiovascular diseases associated with high lipid levels. Further research is warranted to identify and isolate the active compounds responsible for the observed hypolipidemic effect and to explore the underlying mechanisms of action.

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