

AIMS & OBJECTIVES



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3.1 AIMS

The aim of the present work was to carry out pharmacognostical, pharmacological and biotechnological approaches like conservation through micropropagation of some selected endangered or threatened important medicinal plants from Zingiberaceae family. The medicinal plants were selected according to extensive literature survey on endangered or threatened species. Based on the literature survey and current research the most important genus was *Alpinia Roxb* and the three plants were selected from the genus are *A. galanga* L., *A. officinarum* Hance and *A. purpurata* (Vieillard) K. Schumann.

3.2 OBJECTIVES

The goal of the present research is to systematically explore the Pharmacognostical, Phytochemical, Pharmacological and Biotechnological characteristics of (1) *A. galanga* (2) *A. officinarum* (3) *A. purpurata*

To achieve this goal, following objectives are set.

- To carry out pharmacognostical and phytochemical study.
- To investigate pharmacological activity of all the extracts.
- Isolation of bioactive fraction by bioassay guided fractionation method.
- To investigate pharmacological activity of isolated bioactive fraction.
- To enhance active compounds by biotechnological strategies.
- To establish analytical protocol for active constituents.

To achieve the set aim and objectives of the research, the work is planned in following systematic manner

3.2.1 Part I: (*A. galanga* L. willd)

- To procure and authenticate plant material of *A. galanga* L.
- To perform preliminary Pharmacognostic studies of *A. galanga* L.
- To prepare different extracts from the rhizomes of *A. galanga* L.
- To carry out preliminary qualitative phytochemical analysis of extracts of *A. galanga* L.
- To carry out acute oral toxicity studies of the extracts as per Organization for Economic Co-operation and Development (OECD) guidelines (AOT no. 425).

- To investigate anti-inflammatory activity of the extracts using carrageenan induced paw edema.
- To investigate antiarthritic activity of extracts showing superior anti-inflammatory activity using FCA induced arthritis model.
- To isolate important bioactive compounds responsible for significant pharmacological activity.
- To investigate anti-inflammatory activity of bioactive compound using carrageenan induced paw edema.
- To investigate antiarthritic activity of bioactive compound showing superior anti-inflammatory activity using FCA induced arthritis model.
- To characterize important bioactive compounds responsible for significant pharmacological activity
- To establish analytical protocol for active constituents of *A. galanga* L. using chromatographic techniques.

3.2.2 Part II: (*A. officinarum* Hance)

- To procure and authenticate plant material of *A. officinarum* Hance.
- To perform preliminary Pharmacognostic studies of *A. officinarum* Hance.
- To prepare various extracts from the rhizomes of *A. officinarum* Hance.
- To carry out preliminary qualitative phytochemical analysis of extracts of *A. officinarum* Hance.
- To carry out acute oral toxicity studies of the extracts as per Organization for Economic Co-operation and Development (OECD) guidelines (AOT no. 425).
- To investigate anti-inflammatory activity of the extracts using carrageenan induced paw edema.
- To investigate anti-arthritic activity of extracts showing superior anti-inflammatory activity using FCA induced arthritis model.
- To isolate important bioactive compounds responsible for significant pharmacological activity.
- To investigate anti-inflammatory activity of bioactive compound using carrageenan induced paw edema.

- To investigate anti-arthritic activity of bioactive compound showing superior anti-inflammatory activity using FCA induced arthritis model.
- To characterize important bioactive compounds responsible for significant pharmacological activity
- To establish analytical protocol for active constituents of *A. officinarum* Hance using chromatographic techniques.

3.2.3 Part III: *A. purpurata* (Vieillard) K. Schumann

- To procure and authenticate plant material of *A. purpurata* (Vieillard) K. Schumann.
- To prepare various extracts from the leaves of *A. purpurata* (Vieillard) K. Schumann.
- To establish analytical protocol for active constituents of *A. purpurata* using various chromatographic techniques.
- To establish callus culture of *A. purpurata* (Vieillard) K. Schumann.
- To enhance active constituent production by various plant biotechnological strategies and micropropagation on *A. purpurata* (Vieillard) K. Schumann.
- To estimate bioactive compounds from *in vitro* developed biomass in culture medium.
- Pre-hardening and hardening of *in vitro* developed plants.