



PHYTOCHEMICAL AND PHARMACOLOGICAL INVESTIGATION ON AERIAL PARTS OF ALPINIA GALANGA

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Abstract- Traditional system of medication has become more attractive now a days and the potential of clinically viable agents need to be exploited for recognizing their utility in different health care systems. Hence such medicines are evaluated from amongst the rich heritage of these agents is essentially is one of them which have been investigated to establish its importance from the time unknown to the people of present era.

Physical evaluation parameters of aerial parts of plants were i.e. foreign matter content (1.44%) and swelling index (1.86%).

The cold extractive values of aerial parts obtained from different media i.e. alcohol & water were found to be 10.2 and 11.4% respectively.

The obtained results showed that total, acid insoluble, water soluble and sulphated ash contents of the aerial parts were 8.5,5.5,2.0, and 12.7% respectively.

Hence the work, in reference, comprised of the quite novel approaches of investigation.

INTRODUCTION

The herbal drugs are used for four purposes namely pharmacological, food supplements, taste enhancers, cosmetics and colour

promoters. Ayurvedic pharmaceuticals has evolved as a result of constant experimentation, efforts and analysis. The source of Ayurvedic pharmaceuticals is vanaspati (herbal), bhouma (mineral) and pranjia (animal).[1,2]

PHARMACOLOGICAL ACTIVITIES

Diabetes Mellitus:

Diabetes is characterized by increased glucose level in blood and urine, impaired lipid, carbohydrates & protein metabolism and enhanced risk of vascular disease.[3]

Arthritis

Inflammation of joints most commonly accompanies pain, heat, swelling of the surrounding areas and functional losses of such joints. It compares of many causative factors.[4,5]

ADOPTED METHODOLOGY[6,10]**Experimental**

The adopted experimental methodology comprised of following three consecutive steps.

(A): Physico-chemical studies

(B): Phytochemical studies

(C): Pharmacological / biological studies

(A) PHYSICO-CHEMICAL STUDIES

It included collection, identification & authentication of plant and foreign organic matter, loss on drying, swelling factor, extractive & ash value determination.

(B) PHYTOCHEMICAL STUDIES

It included size reduction of aerial parts of plant into coarse powder Form through grinding.

(C) PHARMACOLOGICAL /BIOLOGICAL STUDIES

It included anti-diabetic, anti-inflammatory, anti-arthritis and anthelmintic evaluations.

PHYSICO-CHEMICAL STUDIES**4.4.1.1 PLANT COLLECTION:**

Fresh whole plant was collected from the nursery, Bhubaneshwar, Odisha, India in the month of April.

IDENTIFICATION AND AUTHENTICATION OF THE PLANT

The plant was identified and authenticated by Dr Anjula Pandey Principle Scientist, ICAR-National Bureau of Plant Genetic Resources, Pusa Campus, New Delhi- 110012.

DRYING AND SIZE REDUCTION

Entire plant sample was dried in shade, converted to moderate coarse powder mechanically and

(A) PHYSICO-CHEMICAL STUDIES

stored cautiously away from moisture.

Determination of foreign organic matter

A known weight (100-500g) of the coarse powder was uniformly spreaded over a piece of white tile to inspect with unadded eyes.

Determination of moisture (Loss on Drying)137

5 g of the powdered drug was placed into previously weighed empty porcelain dish and dried repeatedly in the oven at 100°C or 105°C till constant weight condition attained.

(B) PHYTOCHEMICAL STUDIES**PHYTOCHEMICAL INVESTIGATIONS****4.4.2.1 EXTRACTION (SUCCESSIVE SOXHLET EXTRACTION):**

The identified and authenticated plant was used for extraction process, Coarse powder (2.5kg) of the chosen plant drug was processed to successive extraction in a soxhlet apparatus with various solvent (Petroleum ether, methanol & water).

(C) PHARMACOLOGICAL STUDIES**ANTI-DIABETIC ACTIVITY**

Antidiabetic evaluation of methanolic extract of aerial parts of *Alpinia galanga* was carried out using streptozotocin induced diabetes in male albino rats.

ANTI-ARTHRITIC ACTIVITY

The aqueous extract of aerial parts of *Alpinia galanga* was evaluated for its anti-arthritis activity using male albino rats.

RESULT AND DISCUSSION**Table-4.1: Physical parameters of aerial parts of *Alpinia galanga***

Parameters	Aerial parts
% yield (w/w)	Foreign organic matter 0.35
Loss on drying 1.44	Swelling factor 1.86
Parameters	Aerial parts

Table-4.2: Alcohol – soluble and water – soluble extractive values of aerial parts of *Alpinia Galanga*

Extracts	AERIAL PARTS		
	% Yield (w/w) Colour Consistency	% Yield (w/w) Colour Consistency	% Yield (w/w) Colour Consistency
Alcohol	10.2	Dark green	Sticky mass
Aqueous	11.4	Brown	Smooth

(B) PHYTOCHEMICAL STUDIES**PHYTOCHEMICAL INVESTIGATION**

Table – 4.4: Successive Extractive Values (Soxhlet Extraction) of Aerial parts of *Alpinia galanga*

Extracts	AERIAL PARTS		
	% Yield (w/w)	Colour	Consistency
Petroleum ether	2.64	Yellowish green	waxy
Methanol	13.18	Dark green	Sticky mass
Aqueous	9.25	Brown	Soft mass

(C) PHARMACOLOGICAL STUDIES**PHARMACOLOGICAL INVESTIGATION****Table – 4.15: Effect of methanolic extract (aerial parts) on Streptozotocin induced**

Groups	Mean body wt (gm)	
	Before induction	On Day 21
Normal Control	145 ± 1.39	171 ± 1.211
Diabetic Control	154 ± 4.123	130 ± 3.246
Standard 10 mg/kg	128 ± 0.856	161 ± 0.9661
Test – A 200 mg/kg	147 ± 0.516	170 ± 0.5164
Test – B 400 mg/kg	131 ± 1.0	166 ± 1.065

SUMMARY

The present study was aimed at preliminary phytochemical and pharmacological evaluation of aerial parts of *Linn. Family – Zingiberaceae*.

From the thorough investigation of the literature, it was well known that the plant drug had been traditionally reported for its anti-diabetic, anti-inflammatory, anti-arthritic and anthelmintic activities.

The systemic investigation were initiated by performing physico-chemical evaluation i.e. foreign matter content, moisture content, swelling index, extractive and ash values determinations.

The foreign matter content of aerial parts was (0.35%), moisture content (1.44%) and swelling index (1.86%).

The cold extractive values obtained from different media i.e. alcohol & aqueous solvent, with aerial parts were found to be 10.2 and 11.4% respectively.

CONCLUSION***Alpinia galanga***

belonging to the family, *Zingiberaceae*, is a remarkable salt tolerant plant, common in southern areas. The plant is used for alterative, anthelmintic, stomachic, tonic, and aphrodisiac purposes, enriches the blood and is useful in constipation, leprosy, asthma and urinary discharges.

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