

ANTIMICROBIAL SCREENING OF LEAVES OF POLYALTHIA KORINTII

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ABSTRACT

Antimicrobial activity defined as all active principle agents that inhibit growth of bacteria, also known as prevent the formation of microbial colonies and destroy or kill the microorganisms. Protect against pathogenic insects, fungi, bacteria or protozoal Exert bacteriostatic or bactericidal activity on microbes. Ethnobotanically it found that *Polyalthia korntii* have antimicrobial property. The purpose of study is to highlight the antimicrobial activity of *Polyalthia korntii* belongs to the family annonaceae. Chloroform extract were used to evaluate the antimicrobial activity of *Polyalthia korntii* leaves by well plate method using gram positive and gram negative bacteria. The results were compared to those obtained using standard as chloroform.

KEYWORDS: *Polyalthia korntii*, antimicrobial activity, well plate method, extract.

INTRODUCTION

Polyalthia is derived from a combination of Greek words meaning 'many cures' with reference to the medicinal properties of the certain species. Polyalthia korinti is a genus of flowering plants in the family Annonaceae. there are approximately 90 species distributed from South India and Sri Lanka in the Western Ghats-Agasthyamalai. The malayalam name of polyalthia korinti is *Karuvalli*; *Kurinitipanel*. It is a small trees up to 5m tall. Bark is brownish and smooth. Leaves are simple, alternate, distichous; petiole 0.3-0.4cm long, canaliculate, glabrous; lamina 6-8 x 3-4, elliptic to ovate-elliptic, apex acuminate and twisted, base acute, margine entire, glabrous beneath, midrib raised above secondary nerves. 6 pairs, domatia present at axils; tertiary nerves broadly reticulate to obscure.

Polyalthia korinti has significant biological and pharmacological activities such as Anti inflammatory, Anti oxidant, Anti diabetics, Anti microbial, Anthelmintic activity etc. In Polyalthia korintii leaves and bark extracts were screened for anthelmintic activity against *Pheretima posthuma* using hexane, chloroform, methanol, and water extracts. The Anti oxidant property of P. korintii leaves and bark, the extracts were tested. The results of the α - amylase inhibition and α -glucosidase inhibition activities showed that all the extracts of Polyalthia korinti leaves and bark showed a varying effect on glucose utilization.

- Plants of the World Online currently includes the following as accepted

- Polyalthia angustissima* Ridl
- Polyalthia barenensis* Bâ
- Polyalthia borneensis* Merr
- Polyalthia bracteosa* Ban
- Polyalthia bromantha* I.M.Turner

Polyalthia longifolia: -*Polyalthia longifolia* is also known as Buddha tree, mast tree, cemetery tree, false Ashoka or green Champa. This is Generally, P. longifolia is viewed as a street tree because of its effectiveness in combating noise pollution. Macroscopically, the versatile P. longifolia can reach over 15.0 m high with symmetrical pyramidal growth and weeping pendulous branches. There are two varieties of P. longifolia, namely "var. pendula" which has a straightslim trunk and short branches and "var.angustifolia" which has wide spreading branches forming a pyramidal crown with grey and smooth bark.

REPRODUCTION

Polyalthia species flowers are complete, bisexual, i.e., with functional male (androecium) and female (gynoecium), including stamens, carpels and ovary. Pollination is entomophilous i.e., by insects. Flowering/Fruiting: March-May/July-September.

MORPHOLOGY

- An evergreen tree with a straight trunk, conical crown and slender drooping branches, about 10-25 m tall.

- Bark dark grayish brown, branches sparsely puberulous when young, glabrous when mature.
- Leaves simple, alternate, narrow lanceolate or linear lanceolate, 15-25 x 2-4 cm across, base slightly acute or cuneate, margin wavy or undulate, apex long acuminate, membranous, faintly aromatic, shining dark green, glabrous above, lateral veins 25-30 on either side of the midrib, petiole pubescent, about 0.8-1.5 long.

Uses

Cultivated in gardens and roadsides as avenue tree. Wood used for packing cases, boxes etc.

MATERIAL AND METHOD

Scientific Names: *Polyalthia korintii*

Family: Annonaceae

Polyalthia korintii collected from Jamia Salafiya pharmacy college, Malappuram district, Kerala on 18 march 2023 and authenticated by A.K PRADEEP, assistant professor, university of Calicut, the voucher specimen number 178249 is preserved at the Calicut university herbarium, university of Calicut.

Fresh leaves were collected shade dry at room temperature to remove moisture, and crushed.



Fig. No. 1: Dried leaves OF Polyalthia korintii.



Fig. No.2: Crushed leaves of Polyalthia korintii.

EXTRACTION

The collected *polyalthia korintii* leaves were dried and powdered. 50g of powdered leaves were packed in thimble of Soxhlet apparatus. The extraction was carried out with chloroform. The extraction was continued till the solvent in the syphon tube become colorless. The solvent were evaporated by using vaporization water bath and the extract were obtained has a semi solid mass in the bottom of flask. Then the extract were subjected to preliminary analysis and antimicrobial activity.



Fig. No. 3: Soxhlet extraction.

ANTIMICROBIAL SCREENING

Anti-microbial activity

The antimicrobial test was determined by using well plate method. Two types of organism were used; gram negative microorganism *E. coli*, gram positive organism *lactobacillus*. antimicrobial activity was determined by calculating percentage of inhibition.

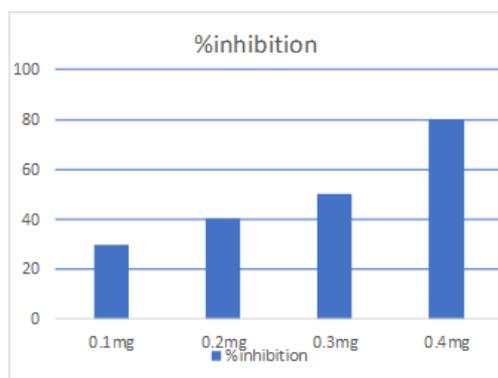
Preparation of microbial culture

Antimicrobial activity of *Polyalthia korntii* plant extract was determined by agar well plate method, by using gram negative bacteria (*E.coli*) and gram possitive bacteria (*Lactobacillus*). Two sterile petri plate were taken for testing the antimicrobial activity. A well was prepared in plates containing 15 ml muller Hinton agar medium and allowed for solidification. 100micro liter (1mg/ml) of test sample was introduced into the well. chlorofom used as control. after 24 hours plates were observed for the zone of inhibition. and the percentage of inhibition was calculated from the following equation

$$\text{Percentage of inhibition} = (\text{control} - \text{test})/\text{control} * 100$$

RESULT**ANTIMICROBIAL ANALYSIS****Antimicrobial activity using gram positive strain****Fig. No.4: Lactobacillus.**

Concentration (mg/ml)	%inhibition
0.1	30
0.2	40
0.3	50
0.4	80

**Antimicrobial activity using gram negative strain****Fig. No.5: E.coli.**

Concentration (mg/ml)	%inhibition
0.1	30
0.2	40
0.3	50
0.4	80

CONCLUSION

- *Polyalthia korintii* (Dunal) Hook.f & Thoms (Annonaceae) was selected for the study
- *Polyalthia korintii* leaves were collected and pharmacognostical characters such as macroscopy were evaluated which paved the way for the authentication and identification of the plant.
- The extraction was carried out with chloroform, the Microbiological evolution of the extracts shows significant antimicrobial activity.
- Well diffusion method was used to evaluate the antimicrobial activity shows percentage of inhibition in chloroform extract.
- The present investigation on this plant conclude that the leaf component of *Polyalthia korintii* possess strong medicinal value which have antimicrobial activity.

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