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Research Article

EVALUATION OF PRELIMINARY PHYTOCHEMICAL & PHYSICOCHEMICAL ANALYSIS OF STEM BARK OF KASHTHADARU WITH ITS ANTI MICROBIAL STUDY ON CERTAIN BACTERIAS.

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ABSTRACT:

Infectious diseases are now increased due to many reasons like low standards of life, unhygienic conditions hence there is a major health problem occurring in India. There are 3.3 to 7 million death occurs annually due to infectious diseases. The causes of these infectious diseases can be co-related with krimis (jantus) as mentioned in Ayurvedic texts. Krimis mentioned in Ayurvedic literature since Vedic kaal. There are references found about krimi as these are responsible for various types of diseases. Krimis (jantus) may be internal or external worms or parasites found in human beings & animals. The data present over this study is not satisfactory. Economy loss due to krimi infestation is more in all over world, so there is a need to search over the control on krimi infestation.

KEYWORDS: infectitious diseases, *Ayurveda*, *krimis*, diseases.

INTRODUCTION:

Kashthadaru is a evergreen tree which grows up to a height of 15 to 20 meters tall. Its leaves are long, narrow and dark green. Margins are ovate lanceolate. Flowers are pale green colored, they last for a short period, usually 2 to 3 weeks. Sepals are ovate triangular, petals greenish yellow, stamens apically convex, Carpels are 20-25 in number with one ovule per carpel; stigmas are sessile. fruits found in clusters of 10-20, ovoid in shape. Initially fruits are green in color but turns purple or black when ripe. Seeds are pale brown, ovoid, with a longitudinal groove.

Kashthadaru is an important drug described in Ayurveda for prameha, jwara, kushtha & in krumi infestations. Now a days to enhance profit, Kashthadaru is adulterated with Ashoka. So the properties of prepared drug will be changed due to

adulteration, hence need to check the properties of Kashthadaru.

काष्ठदारु लघु रुक्षस्तिकः सकटूकोलहिमः।

दीपनः कृमिह् मेहे ज्वरे कुष्ठे च शस्यते ॥ आ.प्रि. शर्मा.

Acharya Priyavrat Sharma mentioned that Kashthadaru has a krimighna property. Research work was conducted in systematic way to study the various parameters of Kashthadaru in following steps:-

MATERIALS AND METHODS

Collection and Authentication of plant materials

The bark of *Polyalthia longifolia* was collected from the Tatyasaheb Kore nursery, Warananagar. The bark of *Polyalthia longifolia* was identified and authenticated at certified lab. Barks were shed dried and powdered to 40-mesh size. The physicochemical parameters like extractive values of powdered bark and bark extract, preliminary phyto-profiling were determined as per WHO guidelines. The average percentage w/w of the ash content and the extractive values were determined. The TLC of bark extract was also studied under ordinary and ultra-violet light at 366 nm. Powdered bark material was successively extracted with water in soxhlet apparatus and was subjected for identification of various plant constituents.

01) Pharmacognostical study:

Botanical name : *Polyalthia longifolia*
 Family : Annonaceae
 Parts used : bark, leaves, flowers

• Macroscopic evaluation of bark:

Grayish to dull brown, thick, thicker roots with collapsed centre, occasionally ridged, wrinkles longitudinal and anastomosed, rootlets rarely present.

• Microscopic evaluation :

Transverse section of thin roots shows thin periderm, followed by broad zone of phloem & still broader zone of xylem traversed by wide medullary rays.

• Sensory evaluation:-

• Kashthadaru bark powder -

1. Odor – characteristic
2. Taste –slightly bitter
3. Color-brown
4. Touch/external surface –rough.

• Organoleptic evaluation of Kashthadaru :

Sr. No.	Test	Observation
1	Color	Brown
2	Odor	Characteristics
3	Taste	Slightly bitter
4	Touch	Hard , rough

02) Physicochemical study:

Sr. no.	Parameters	<i>Polyalthia longifolia</i>
1	Total ash	3.07%
2	Acid insoluble ash	0.74%
3	Alcohol soluble extractive	13.97%
4	Water soluble extractive	23.11%
5	Moisture content@110 c.	3.92%
6	Loss on drying @110 c.	3.92%
7	Water soluble ash	<0.1%

02) Phytochemical study:

Thin layer chromatography:

Name of sample: Kashthadaru bark (*Polyalthia longifolia*)

Extraction: Alcoholic extract

Adsorbent used: silica gel G60F₂₅₄

Mobile phase: Toluene: Ethyl Acetate: Formic acid (5: 4: 1)

1 spot was observed

Spot	RF value	Color
1	0.63	Yellow
UV 254 nm: 1 spot were observed.		
Spot	RF value	Color
1	0.63	Yellow
UV 365 nm: 1 spots were observed.		
Spot	RF value	Color
1	0.63	Yellow
Iodine chamber: 4 spots were observed.		
Spot	RF value	Color
1	0.63	Yellow
2	0.69	Yellow
3	0.70	Yellow

04) Antimicrobial study

The agar well disc diffusion technique is used to ensure qualitatively the in vitro activity of an Antimicrobial agent against the test bacteria's.

In this method, the Petri dishes were filled with inoculated liquefied agar medium to uniform

thickness. Then graded amount of test samples are incorporated in agar plates and inoculated in spots

with the organisms under study.

RESULTS & DISCUSSION :



<i>Polyalthia longifolia</i>	75	50	25	10	5	Oflox
E. Coli	20mm	18mm	12mm	10mm	R	32mm
S.aureus	25mm	20mm	17mm	14mm	11mm	18mm
						Fluconazole
Candida	22mm	12mm	10mm	R	R	45mm

Note: R-resistant.

Physicochemical values of the plant powder under ordinary light and UV light (UV 365 nm) are determined. Ash values of a drug give an idea of the earth matter or the inorganic composition and other impurities present along with the drug. The percentage of total ash, acid insoluble ash. Extractive values are primarily useful for the determination of exhausted or adulterated drugs. The water soluble and alcohol soluble extractive values have been determined. Preliminary phytochemical screening revealed the presence of tannins. The antibacterial activities of the stem bark extracts of *Polyalthia longifolia* against medically important pathogens were assessed by the presence or absence of inhibition zones and the MIC values. The antibacterial activity by agar well disc diffusion method showed that the extracts of stem bark of *Polyalthia longifolia* were very effective against these bacteria tested. The present study reflects hopes for development of new chemotherapeutic agents.

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