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Pharmaceutico-analytical study of *Triphaladya taila* and its antimicrobial study (in-vitro).

Dipalee S. Thakur[1]*, Rashmi V. Bedse[2]

1. Ph.D. Scholar (*Rasashastra & Bhaishajya Kalpana*), Assistant Professor
2. Ph.D. Scholar (*Rasashastra & Bhaishajya Kalpana*), Assistant Professor,

Dept. of *Rasashastra & Bhaishajya Kalpana*,
Shree Saptashrungi Ayurved Mhavidyalaya, Nashik, Maharashtra, India
***Corresponding author:** dipalee_94@rediffmail.com

ABSTRACT-

Introduction: *Triphaladya taila* is a medicated oil described in *Chakradatta* for *Arunshika*. *Arunshika* comes under *Kshudra Roga* and is correlated with Seborrheic dermatitis. *Staphylococcus aureus is the most common cause of Seborrheic dermatitis. The aim of the present study is to analyse Triphaladya taila physico-chemically and to study its antimicrobial activity in-vitro.*

Objectives: To prepare *Triphaladya taila* according to *Chakradatta*, To analyse *Triphaladya taila* physico-chemically and To study the antimicrobial activity of *Triphaladya taila* in-vitro.

Methodology: The *Triphaladya taila* is prepared according to *Chakradatta*. Physico-chemical analysis of *Triphaladya taila* is done in laboratory and its antimicrobial activity is observed with the help of Agar Disc Diffusion method.

Result and Conclusion: Result and conclusion is drawn on the basis of physico-chemical analysis and observations of antimicrobial study.

Keywords:

Triphaladya taila, *Arunshika*, *Staphylococcus aureus*.

INTRODUCTION:

Ayurveda is well developed, documented traditional system in Indian medicine. *Rasashastra* and *Bhaishajya Kalpana* is one of the branch of Ayurveda deals with the pharmacological aspect of drugs. Some of which have unique attributes, these unique attributes need to be validate and explored using the scientific and technological advances of today's

world. Which shall open up new avenues for drug processing, development and therapeutics in *Ayurveda*.

Triphaladya taila is medicated oil used in Ayurveda for *Arunshika* according to *Chakradatta*.[1] In *Ayurveda* many remedies are described as internal medicines and external applications for *Arunshika*. *Taila kalpana* are the unique formulations which are prepared by using oil as a base. *Taila* are used for both *bahya* and *abhyantar chikitsa*.

Arunshika is catagorised under *kshudra roga* which affects the scalp.[2]According to *Sushrut Samhita Arunshika* is excessively sodden lesions having multiple openings are produced in the head with profuse discharge due to vitiation of *kapha*, *rakta* and *krimi*. *Arunshika* can be compare with Scalp folliculitis. According to studies most common causative agent of Scalp folliculitis is Staphyalococcus aureus(staph).[3]

Aim of present study is to check pharmaceutico-analytical standards of *Triphaladya taila* and to evaluate its antimicrobial activity with regard to Staphtlococcus aureus in vitro.

Aim:

To study *Triphaladya Taila* pharmaceutico-analytically and to evaluate its antimicrobial activity.

Objectives:

1. To prepare *Triphaladya taila* as per the reference of *Chakradatta*.
2. To study physico-chemical parameters of *Triphaladya Taila*.
3. To evaluate the in vitro antimicrobial activity of *Triphaladya taila* against Staphylococcus aureus.
4. To compare antimicrobial activity of *Triphaladya taila* with standard antibiotic Doxycycline.

MATERIALS AND METHODS:

Preparation of Triphaladya taila

Triphaladya taila was prepared according to the procedure mentioned in Chakradatta. Tila taila was used as a base for the preparation of Triphaladya taila.[4]

METHODOLOGY:

1. Kalka was prepared by using-Triphala, Jatamansi, Bhringaraj, Utpal, Sariva, Saindhav and Jala as required.
2. Kalka of all above dravya are 250 gms and 1 lit of taila, 4 lit of Jala were added to it. Then it was heated on mild flame till the Siddhi lakshanas of taila appeared.
3. Sneha siddhi pariksha was done to confirm that there is no water content left in Sneha and it is ideal to use as medicine
4. There are three Sneha siddhi lakshana:

   Sneha Siddhi Lakshana:

   - Phenodgama- Foam starts coming on taila.
   - Varti-When the kalka is rubbed in between the finger of the hand varti forms
   - Shabda Pariksha- Sneha is dropped on flame it gets burn without any noise (without cracking sound)

After attaining the sneha siddhi lakshana the heating of sneha was stopped and Triphaladya taila was filtered with help of cleaned cloth when it was lukewarm. Analytical testing of Triphaladya taila was then carried out.

Table No. 1: Ingredients of Triphaladya taila

Sr. No.	Raw Drug	Parts used	Quantity
1.	*Triphala* (*Amalaki*, *Haritaki*, *Bibhitaki*)	Fruit	250 gm
2.	*Jatamansi*	Rhizome	
3.	*Bhringaraj*	Panchang	
4.	*Utpal*	Flower	
5.	*Sariva*	Root	
6.	*Saindhav*	-	
7.	*Jala*	-	4 lit
8.	*Tila taila*	-	1 lit

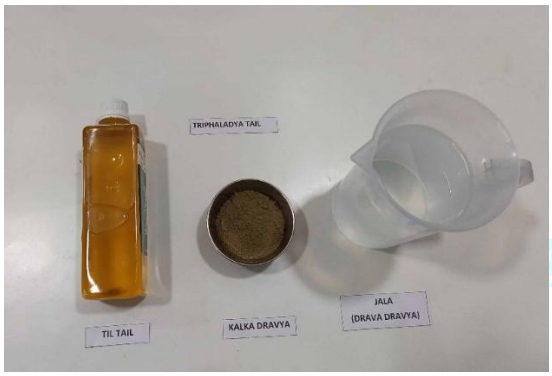

Figure 1: Ingredients of *Triphaladya taila*

Antimicrobial testing:

Staphylococcus Aureus grown at a temperature range between 15℃ to 45℃. Agar disc diffusion method used for antimicrobial susceptibility testing. In this method, the test agar plate was swabbed with a standardized concentration of the S. aureus, and then paper disks containing *Triphaladya taila* and Doxycycline were placed on the lawn of bacteria. *Plates are incubated at 37°C for 24 hrs.* After overnight incubation, the diameter of the zone of inhibited growth around the disc was measured.

OBSERVATIONS:

During Preparation of *Triphaladya taila*:

1. During preparation it becomes sludge like, yellow coloured *Triphaladya taila* was obtained

2. The *kalka* was looking smooth dense mass accumulated in form bolus, separated from layers of taila when rolled between two fingers, the *kalka* become wick (*varti*) like.

3. No crackling sound observed while burning *kalka* wick on fire.

4. Characteristic, colour, smell and taste were observed.

RESULTS:

Physico-chemical testing of Triphaladya taila:

Table No. 2: Analytical testing of Triphaladya taila

Test	Result
Appearance	Clear oil
Colour	Yellow
Odour	Characteristics
pH	5
Refractive index	1.4877
Specific gravity	0.87120
Saponification value	176.2
Iodine value	59.4
Acid value	0.7

Antimicrobial testing:

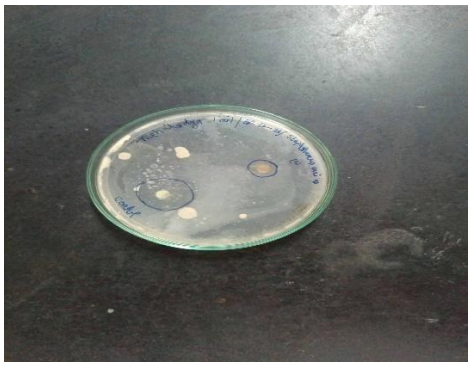

Figure 2: Agar disc showing zone of inhibition

Table No 3: Zone of inhibitions of *Triphaladya taila* and Doxycycline

Name of Drug	Zone of inhibition in mm
Triphaladya taila	7 mm
Doxycycline	16 mm

Tila taila taken was 1000 ml and final product obtained as *Triphaladya taila* was 750ml.

Physico-chemical testing of *Triphaladya taila* shows yellow coloured clear oil with characteristics odour. PH of *Triphaladya taila* was 5, Refractive index 1.4877, Specific gravity 0.87120, Saponification value 176.2, Iodine value 59.4 and Acid value 0.7.

DISCUSSION:

Ayurvedic literature named *Chakradatta* has explained *Triphaladya taila* in *Arunshika* which is included in *Kshudra Roga Prakaran* as mentioned in *samhita*. *Tila taila* is used as a base for preparation of oil. In *Triphaladya taila* *Triphala*, *Jatamansi*, *Bhringaraj*, *Utpal*, *Sariva*, *Saindhav* were the main constituents. *Triphala* has *madhur-amla rasa*, *sheeta virya* and *madhur vipaka*.[5] *Jatamansi* has *Tikta madhur kashay rasa*, *Sheeta virya*, *katu vipaka*, and acts as *tridoshaghna*. *Bhringraj* has *katu rasa*, *Ushna virya*, *katu vipaka* and it acts as *kapha-vata shamak*. *Bhringaraj* also has *kehsya* properties. *Sariva* has *madhur tikta rasa*, *sheeta virya* and *madhur vipaka*. *Saindhava* has *lavan rasa*, *sheeta virya* and *madhur vipaka*. *Utpala* has *Kashaya- madhur-tikta ras*, *sheeta virya*, *madhur vipaka* and it act as *kaphapittashamak*. These all dravya are mainly *kapha pitta shamak* and hence indicated in the treatment of *Arunshika*.

Organoleptic study of *Triphaladya taila* shows that appearance, odor is acceptable to go for further analysis. Physico-chemical analysis results show that oil prepared was physically and chemically stable and help to maintain consistency of Madhyam paka as it required for local application. In Physico chemical parameters, pH of Triphaladya taila is helpful for proper absorption of taila. Antimicrobial study shows 7 mm zone of inhibition for Staphylococcus aureus in Agar disc diffusion method.

CONCLUSION:

Analytical parameters of *Triphaladya taila* shows that it is safe for external application in *Arunshika*. Antimicrobial study shows 7 mm zone of inhibition against Staphylococcus aureus which means it is effective in treating scalp folliculitis but it is less effective than Doxycycline, AS Doxycycline shows 16 mm zone of inhibition in Agar disc diffusion method.

Clinical trials can be conducted for future research directions.

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