PHARMACOGNOSTICAL AND PHARMACEUTICAL EVALUATION OF POLYHERBAL FORMULATION *AJAMODADI VATAKA*

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Abstract: Evaluation of herbal formulation is important in order to evaluate the quality, purity, safety and efficacy of drugs built on quantity of their active principles. The purpose of the present work is standardization of *Ajamodadi Vataka*. It is polyherbal preparation containing three components. The *Ajamodadi Vataka* is cited in the ancient books of *Ayurveda* used for the treatment of *Amavata* (Rheumatoid arthritis). *Ajamodadi Vataka* was prepared to evaluate the organoleptic characters, pharmacognostical study and physicochemical parameters. Outcomes of the study are helpful in standardization of polyherbal *Ayurvedic* formulation *Ajamodadi Vataka*, which will help worldwide acceptance of the formulation and standing of the *Ayurveda* system.

Key words: *Amavata, Ajamodadi Vataka,* Pharmacognosy, Pharmaceutics, Standardization.

Introduction:

Rheumatoid arthritis is one of the challenging joint diseases encountered by physicians in day-to-day practice due to its chronicity, progressive nature, complications, and morbidity. According to *Madhava Nidana, Ama* carried by vitiated *Vata* travels throughout the body and accumulates in the joints and enters in the *Trika* (pelvic girdle) and *Sandhi* (joints) leading to stiffness (*Staidhata*) of the body, hence *Amavata* occur[1].*Acharya Madhava* has described causative factors for the disease as *Viruddhahara* (unwholesome diet), *Viruddhachesta* (erroneous habits), *Mandagni*, sedentary lifestyle, and exercising immediately after food[2].

The term "*Amavata*" is derived from two words - "*Ama*" and "*Vata*" where the word *Ama* means improper or partially or immature digested matter. Principal of treatment on *Amavata* in *Chakradatta* is very simple. *Langhana, Svedana, Tiktarasadravya, Deepaniyadravya, Katurasadravyas, Virechana Karma, Snehapana* and administration of *Basti* are prescribed in the treatment of *Amavata. Bruhata Saindhavadi Anuvasana Basti* followed by *Kshara Basti* is also recommended in *Amavata*. *Ruksha Sveda* should be applied with sand pouches in *Amavata*[3]. Looking into the above fact, it can be said that the drug having *Amapachana, Deepana, Vatahar, Shothahara, Vedanahara* properties can be the choice of drugs for the management of Rheumatoid Arthritis. Hence, In *Ajmodadi Vataka,* the contents are *Ajmoda, Vidanga, Sunthi* etc. are having property of *Deepana, Pachana, Ushna, Tikshna Guna* and *Vatanulomana, Ama Pachana, Ajmoda* with *Tikshna, Ushna Guna* it becomes *Sukshma Srotogamini*. So the *Ajmodadi Vataka* have the potent

pharmacological action on the *Amavata*(RA), the effect of the drug can be further justified on analyzing the result of clinical trial. Vata has the properties like *Ruksha, Laghu, Sheeta, Sukshma, Chala, Vishada, Khara* etc. in *Chakradatta.*

In the present study, the formulation is subjected to pharmacognostical and pharmaceutical analysis to standardize the finished product *Ajamodadi Vataka* was verified and all the ingredients were proved to be authentic.

MATERIALS AND METHODS

Drug Material

Raw drug material was collected from the pharmacy of Gujarat Ayurved University and local market of Jamnagar.

Table : 1. These are the ingredients and part used of ***Ajamodadi Vataka*[4] *:***

No.	Name & Latin name	Part used	Proportion
1	*Ajamoda(Apium graveolens,* Linn*)*	Fruit	48 gm
2	*Maricha (Piper nigrum* Linn.*)*	Fruit	48 gm
3	*Pippali (Piper longum* Linn*)*	Fruit	48 gm
4	*Vidanga (Embelia ribes* Burm.*)*	Fruit	48 gm
5	*Suradaru (Cedrus deodara* Loud*)*	Bark	48 gm
6	*Chitraka (Plumbago zeylanica* Linn*)*	Root	48 gm
7	*Sataha (Anethum sowa* Kurz*)*	Fruit	48 gm
8	*Saindhava (Rock salt)*	-	48 gm
9	*Pippalimoola(Piper longum* Linn*)*	Root	48 gm
10	*Sunthi (Zingiber officinalis* Roscoe*)*	Rhizome	480 gm
11	*Vrudhdhadaru (Argyreia speciosa,* Sweet*)*	Root	480 gm
12	*Pathya (Terminalia chebula* Retz*)*	Fruit	240 gm
13	*Guda*	Concentrated cane juice	1632 gm

Methods of preparation of *Ajamodadi Vataka*

All the elements of *Ajamodadi Vataka* were taken and first into *Churnas* were ready. *Churnas* were mixed in equal quantity of the *Guda*. Then this combination was transformed into granules by using the granular machine. Lastly, 500 mg tablets were made in tablet making machine.

Pharmacognostical study

Raw drugs were recognised and authenticated by the pharmacognosy laboratory, IPGT & RA., Jamnagar. The identification was carried out based on the morphological structures, organoleptic features and powder microscopy of the individual drug. Later, pharmacognostical evaluation of the tablets was carried out. Tablet was liquefy in small quantity of distilled water, filtered through filter paper and studied under the microscope attached with camera, with stain and without stain. Microphotographs were taken by using Carl Zeiss binocular microscope attached with camera[5].

Physicochemical evaluation

Ajamodadi Vataka was analysed by using standard qualitative and quantitative parameters, HPTLC was carried out after making suitable solvent system with methanolic extract of *Ajamodadi Vataka* at the pharmaceutical chemistry lab, IPGT & RA. Gujarat Ayurved University, Jamnagar[6].

OBSERVATION AND RESULTS

Organoleptic evaluation

The Organoleptic characters are very important and give the general idea regarding the gentility of the sample. It is done with the help of *Panchagyanendriya Pariksha/* sense organs. Various parameters such as colour, odour, taste, touch and texture of the finished product were observed and recorded[7].

Table : 2. Organoleptic evaluation of *Ajamodadi Vataka*

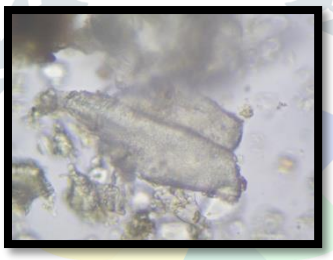
Parameters	Results
Colour	Light greenish gray
Odour	Aromatic
Taste	Salty astringent
Touch	Fine coarse

Microscopic study

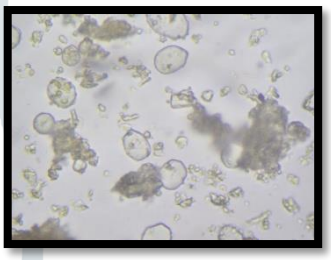
The powder microscopy of *Ajamodadi Vataka*was studied microscopically and microscopic characters of the powder were drowned.

Figure no. - 1-20 Microphotographs of*Ajamodadi Vataka*

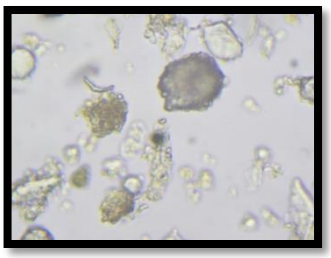
1. Powder of *Ajamodadi Vataka*



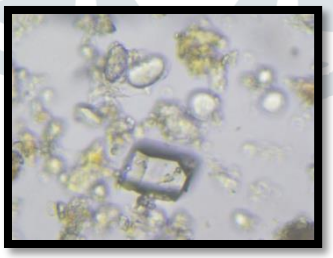
2. Black debrries of *Maricha*



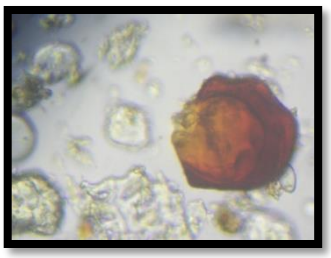
3. Starch grains of *Shunti*



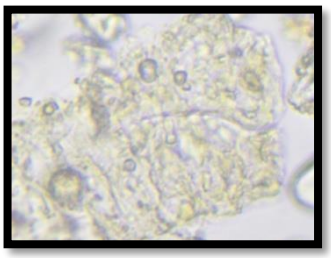
4. Cluster crystal of *Vruddhadaru*



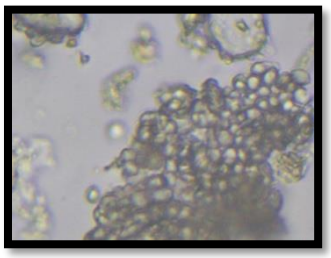
5. Prismatic crystal of *Chitraka*



6. Olioresine contant of *Vidang*

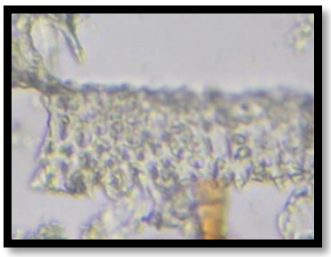


7. Oil globules of *Ajmoda*

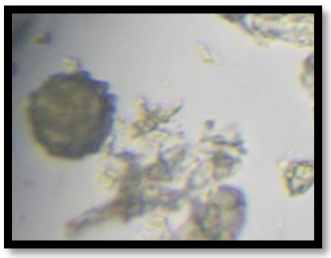


8. Starch grains of *Vruddhadaru*

9. Stone cells of *Suradaral*

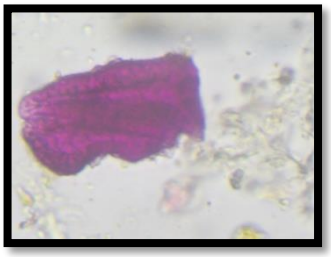


10. Pitted vesslels of *Chitrak*



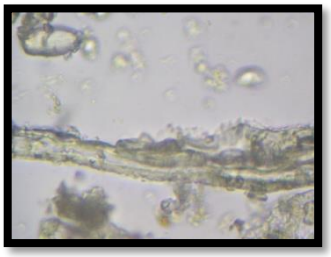
11. Cluster crystal of *Suradaral*

12. Scalariform vessels of *Shunti*

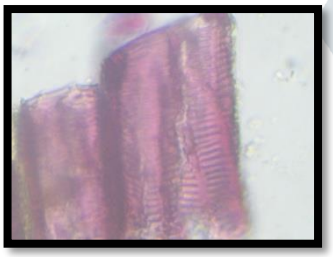


13. Stone cells of *Pippali moola*

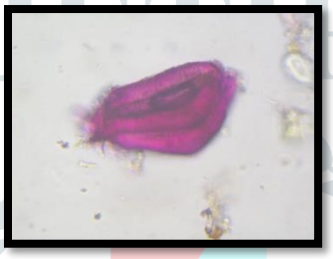
13. Fibres of *Chitrak*



14. Fibres of *Shunti*

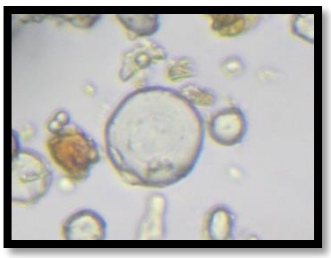


15. Annular and Pitted vessels of *Pippali moola*

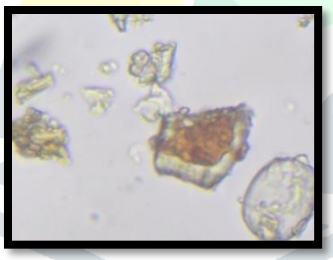


16. Lignified stone cells of *Vidang*

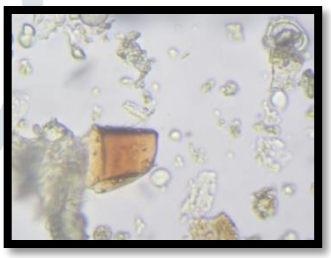
17. Stone cells of *Vruddhadaru*



18. Oil globules of of *Satava*



19. Stone cells of *Vidang*



20. Tannin cantant of *Chitraka*

Physico-chemical analysis

Physical analysis like shape, size, weight variation, hardness and uniformity of weight were recorded and results are mentioned in the below table.

Table : 3. Physico-chemical analysis of *Ajamodadi Vataka*

Parameters	Results
Shape	Round
Size	0.5 cm
Weight variation	4 %
Uniformity	562.55 mg
Hardness	0.8 kg/cm^2

Qualitative analysis

Physico-chemical analysis were carried out by following the parameters. Physico-chemical analysis like loss on drying, ash value, water soluble extract, alcohol soluble extract were recorded. Results are mentioned in tne below table.

Table : 4. Qualitative analysis of *Ajamodadi Vataka*

No.	Analytical parameter	Results
1	Lose on drying	14.11% W/W
2	Ash Value	7.056 %W/W
3	Water soluble	9.340 % W/W
4	Alcohol soluble	10.47% W/W

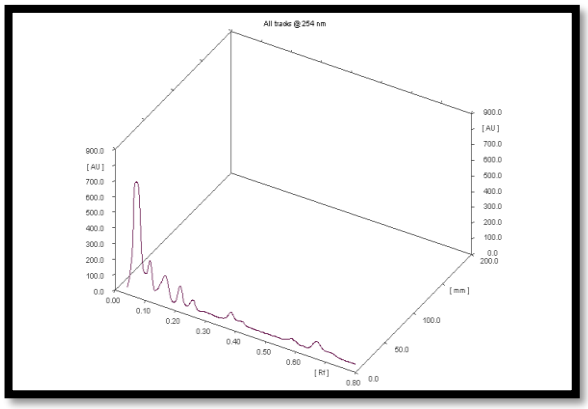
High performance thin layer chromatography (HPTLC)

HPTLC was carried out after making suitable solvent system with methanolic extract of *Ajamodadi Vataka*. On performing HPTLC, visual observed tablet under UV light, showed few spots but on analysing under densitometer at 254nm and 366nm it results into 14 and 13 spots respectively. Results HPTLC and densitogram is given below.

Table: 5. Maximum R_f value of *Ajamodadi Vataka*

Chromatogram shows 10 prominent spots at **254nm** with maximum R_f value		Chromatogram shows 04 prominent spots at **366nm** with maximum R_f value	
No. of Spots 12	**0.05**	**No. of Spots 13**	**0.05**
	0.10		**0.13**
	0.15		**0.41**
	0.20		**0.44**
	0.24		
	0.37		
	0.40		
	0.57		
	0.65		
	0.70		

Figure No. 20 – 21 Densitogram curve of Methanol extract of *Ajamodadi Vataka*at 254nm



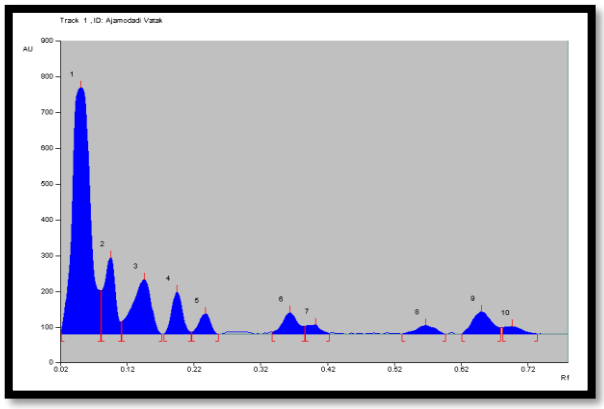
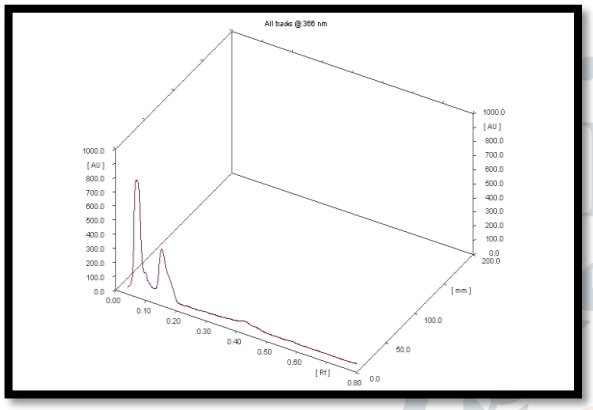


Figure No.20 **Figure No.21**

Figure No.22-23 Densitogram curve of Methanol extract of *Ajamodadi Vataka*366 nm



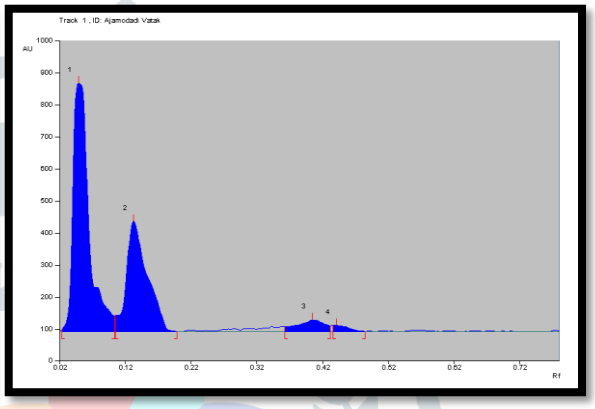


Figure No.22 **Figure No.23**

DISCUSSION

Pharmacognosy and pharmaceutical assessment of *Ajamodadi Vataka* was performed which is effective medicine in the management of *Amavata*. *Ajamodadi Vataka* was authenticated and analysed before processing because good quality products mainly dependent upon genuine raw materials. The Black debrries, Starch grains, stone cells, oil globule, Annular vessels, Cluster crystal, Prismatic crystal, Fibers, Tannin contant, Lignified stone cell, and Pitted vessels are observed under the microscope which was used as ingredients. In physicochemical analysis, uniformity of tablets(562.55 mg), hardness of tablets(0.8 kg/cm^2), loss on drying(14.11% W/W), ash value(7.056 %W/W), water soluble (9.340 % W/W), alcohol soluble extract(10.47% W/W) and HPTLC profile of the methanolic extract of the drug showed 10 spots at 254 nm and 04 spots at 366 nm. was observed and assessed though the important investigation and analysis are essential for the identification of all the active chemical ingredients of the test drug to validate the clinical efficacy.

CONCLUSION

Pharmacognostical study outcomes approve that all characters were found in ingredient drug of *Ajamodadi Vataka*. The physicochemical analysis is inferred that the formulation meets maximum qualitative standards and all the parameters discussed here may be used as identifying tools for the quality assessment of

Ajamodadi Vataka. Thus, outcome of the study may be taken as standard references groundwork fundamentals for the present study, additional for the further studies.

REFRENCES:

[1]Dr.BrahmanandTripathy, editor. Madhavanidanam of srimadhavkara with madhukosa commentary by srivijayaraksita and srikanthadatta.Amavatanidana 25. Varanasi :ChaukhambhaSurbhartiPrakashana/reprint 2012. p. 575

[2]Dr.BrahmanandTripathy, editor. Madhavanidanam of srimadhavkara with madhukosa commentary by srivijayaraksita and srikanthadatta.Amavatanidana 25. Varanasi :ChaukhambhaSurbhartiPrakashana/reprint 2012. p. 575

[3]Priyavat Sharma, editor. Chakradatta of Chakrapanivirachita, Amavata Chi.24, withRatnaprabha Commentary, Jaipur : Swami Jayram Das Prakashana, Jaipur/reprint 1993, p. 424

[4] Sa S. MadhyamkhandaAdhyaya 6/115-119

[5] Wallis TE, Text book of Pharmacognosy, 5th Ed., New Delhi: CBS Publishers & Distributors, 2002; 123-132, 210-215.

[6]Stahl E; Thin-layer chromatography a laboratory hand book, 2nd edition. Springer-Verlag New York, 1969; 125-133.

[7]Iyengar MA, Pharmacognosy of powdered drugs. Published by Manipal Power Press, Manipal. 1980; 9-43.