

**PHARMACOGNOSTICAL AND PHARMACEUTICAL EVALUATION
OF AADITYA PAKA GUGULU IN THE MANAGEMENT OF
ASTHIGATA VATA**

Sangeeta R. Tanwar*¹, Anup B. Thakar², Harisha C.R.³ and Shukla V.J.⁴

¹PG Scholar, Department of Panchakarma, I.P.G.T. and R.A., Gujarat Ayurved University,
Jamanagar, Gujarat.

²I/C Head, Department of Panchakarma, I.P.G.T. & R.A., Gujarat Ayurved University,
Jamanagar, Gujarat.

³Head, Pharmacognosy Lab. I.P.G.T. & R.A., Gujarat Ayurved University, Jamanagar,
Gujarat.

⁴Head, Pharmaceutical Chemistry Lab, I.P.G.T. & R.A., Gujarat Ayurved University,
Jamanagar, Gujarat.

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***Corresponding Author**

Dr. Sangeeta R. Tanwar

PG Scholar, Department of
Panchakarma, I.P.G.T. and
R.A., Gujarat Ayurved
University, Jamanagar,
Gujarat.

ABSTRACT

Asthigata Vata is an age related degenerative condition and is explained in *Brihatrayi* as one of the *Dhatugata Vata Vyadhies*. The trial drug *Aadityapaka Guggulu* (APG), explained in *Chakradatta* for the management of *Asthi-Sandhigata Vata*, is such a remedy having the properties to pacify *Vata Dosha* as well as *Bhagna Sandhana*, *Rasayana* and *Vedana Shamaka* effects. Pharmacognostical & Analytical study of APG have been carried out for the evaluation of its efficacy in the *Asthigata Vata* disorder. On pharmacognostical study, Cork, Trichomes and Scleroids of *Vibhitaki*, Silica deposition of *Amalki*, Stone cells & Epicarp cells of *Haritaki* & *Ela*, oil globule of *Ela* and black debris of *Pippali* were identified. Analytical study

showed 10 spots at 254 nm and 8 spots at 366 nm.

KEYWORDS: *Asthigata Vata*, *Dhatugata Vata Vyadhi*, *Rasayana*, *Vedana shamaka*.

INTRODUCTION

Asthigata Vata is an age related degenerative condition and is explained in *Brihatrayi* as one of the *Dhatugata Vata Vyadhies*.^[1] General *Vata Vyadhi Nidanas* can be considered as the

etiologigal factors for *Asthigata Vata* as no specific *Nidana* has been explained for *Asthigata Vata*. According to *Ayurvedic* classics, there is an intimate relationship between *Vata Dosha* and *Asthi Dhatu*.^[2] *Vata*, when vitiated, gets established in *Asthi* (Bone) *Dhatu* and produces the symptoms like *Asthibheda*, *Parvabheda*, *Sandhishoola* etc. The trial drug *Aaditya Paka Guggulu* (APG) is a very simple formulation, explained in *Chakradatta* for the management of *Asthigata Vata*.^[3] *Aaditya Paka Guggulu* is made up of – *Guggulu* in combination with *Triphala*, impregnation with *Dashamula Kashayam*, *Pippali*, *Twak* and *Ela* which are easily available, cheap & affordable. *Guggulu* is a magical remedy in many diseases. It removes blocks in various channels of the body and facilitates easy transportation of nutrients and essentials. *Guggulu* effectively alleviates *Vata* which is basically the causative factor for all the painful conditions including osteoarthritis, osteoporosis, osteopenia, degenerative diseases, *Vata* disorders etc. It is also a potential analgesic. *Triphala* has Laxative & *Rasayana* properties (rejuvenation, anti-ageing, immune modulator) which helps in effective healing and also in preventing relapses. *Dashamula* is known for its anti-inflammatory property and along with *Guggulu*, it halts or delays degeneration. Hence, the whole combination i.e. *Aaditya Paka Guggulu* is having the *Vata Shamaka* properties as well as *Rasayana* and *Vedana Shamaka* effect.

MATERIALS AND METHODS

Collection of raw drug

The raw drugs for the preparation of *Aaditya Paka Guggulu* (APG) were procured from the Pharmacy, Gujarat Ayurved University, Jamnagar. The ingredients & parts used in the preparation of the final product are listed in the table 1.

Preparation of drug

The final product i.e. *Aaditya Paka Guggulu* was prepared in the pharmacy, Gujarat Ayurved University, Jamnagar, Gujarat, India.

Pharmacognostical study

The Pharmacognostical study comprises of organoleptic study and microscopic study of finished product. The contents of the *Aaditya Paka Guggulu* were used in the dry powder form for this study.

Organoleptic Study

The Organoleptic characters of Ayurvedic drugs are very important and give the general idea regarding the genuinity of the sample. It is done with the help of *Panchagyanendriya Pariksha*. Powder characteristics of the sample were identified with the help of Pharmacognosy laboratory, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar, Gujarat, India.^[4]

Microscopic Study

Aaditya Paka Guggulu was powdered and dissolved with water and microscopy of the sample was done without stain and after staining with Phloroglucinol + HCl. Microphotographs of *Aaditya Paka Guggulu* were also taken under Carl-zeiss trinocular microscope.^[5]

Physico-chemical analysis

Aaditya Paka Guggulu was analyzed using various standard physico-chemical parameters such as Loss on drying, water soluble extract, alcohol soluble extract etc.^[6]

High Performance Thin Layer Chromatography (HPTLC)

HPTLC was performed as per the guideline provided by API. Methanolic extract of drug sample was used for the spotting. HPTLC was performed using Toluene+ Ethylacetate+ Formic acid (7:2:0.5) solvent system and observed under visible light. The colour and R_f values of resolved spots were noted.^[7]

RESULTS

Organoleptic characters of APG

Organoleptic characters of APG such as color, odour taste etc. examined by sensory organs and results are as shown in Table 2.

Microscopic characters of APG

Diagnostic characters of *Aaditya Paka Guggulu* were observed under the microscope and presence of all ingredients showed their different characters.

Stone cells of *Pippali*, Rosette crystals of *Ela*, Simple and Compound Starch Grains, Stone cells, Blunted fibers of *Dalchini*, Black debris of *Pippali*, Trichomes of *Vibitaki*, Silica deposition, group of Scleroids of *Amalaki*, Stone cells, Cork cells, fibers of *Dalchini*, Epicarp

cells of *Haritaki*, Scleroids & Stone cells of *Vibitaki*, Prismatic crystal, Oil globule, Epicarp cells of *Ela* observed under microscope. (Plate 1. Fig 1-21).

Physicochemical parameters of *Aaditya Paka Guggulu*

Physicochemical parameters of *Aaditya Paka Guggulu* such as ash value, water soluble extract, alcohol soluble extract, pH etc. results are shown in Table 3.

HPTLC Study

Chromatogram shows 10 prominent spots at 254nm with maximum Rf value 0.03, 0.21, 0.41, 0.51, 0.61, 0.66, 0.70, 0.74, 0.82, 0.96 and 8 spots at 366nm with maximum Rf value 0.03, 0.21, 0.51, 0.61, 0.66, 0.70, 0.82, 0.95. (Plate 2 Fig 1-3).

DISCUSSION

Pharmacognostical study reveals authentication of *Aaditya Paka Guggulu* was cross verified with standard reference API. The Starch grains, stone cells, oil globule, trichomes, fibres, prismatic crystals, rhomboidal crystals, tannin, simple pitted vessels are observed under the microscope which were used as ingredients. All the physico-chemical parameters i.e. Loss on drying, Water soluble extract, Methanol soluble extract and pH value were analyzed and found to be within the normal reference range. The physicochemical analysis showed Loss on drying (1.20% w/w), Water soluble extract (35.5% w/w), Methanol soluble extract (14.2% w/w), pH (6). HPTLC profile of the methanolic extract of the drug showed 10 spots at 254 nm and 8 spots at 366 nm, which shows the presence of 5 to 8 active principles present in the sample.

Table 1: Ingredients of APG

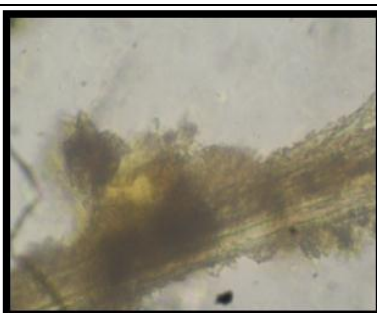
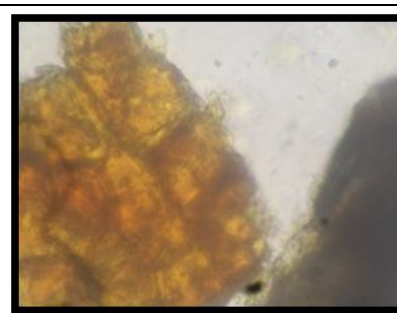
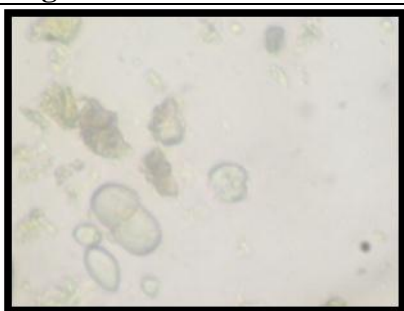
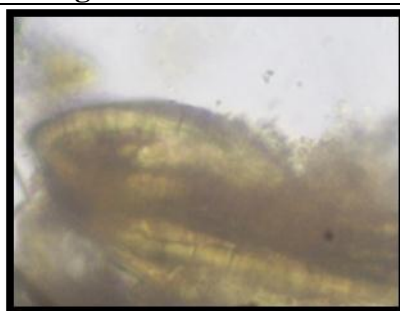
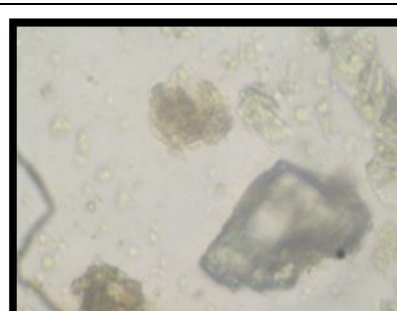
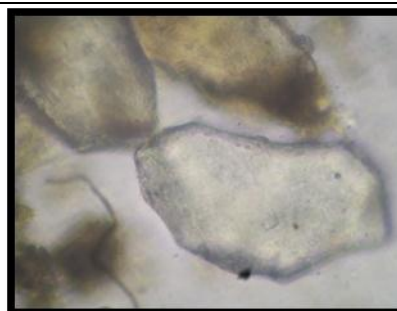
Sr.No.	Name of Drug	Botanical Name	Part used	Part
1.	<i>Amalki</i>	<i>Emblica officinalis Gaertn.</i>	Fruit	1 part
2	<i>Bibhitaki</i>	<i>Terminalia bellirica Roxb.</i>	Fruit	1 part
3	<i>Haritaki</i>	<i>Terminalia chebula Retz.</i>	Fruit	1 part
4	<i>Pippli</i>	<i>Piper longum Linn.</i>	Root, fruit	1 part
5	<i>Dalchini</i>	<i>Cinnamomum zeylanicum Breyn.</i>	<i>Twak</i>	1/4part
6	<i>Ela</i>	<i>Elettaria cardamomum Maton.</i>	Seed	1/4 part
7	<i>Guggulu</i>	<i>Commiphora mukul Engl.</i>	<i>Niryasa</i>	5 part
8.	<i>Dashmoola Kwatha (Bhavana Dravya)</i>		Decoction	QS

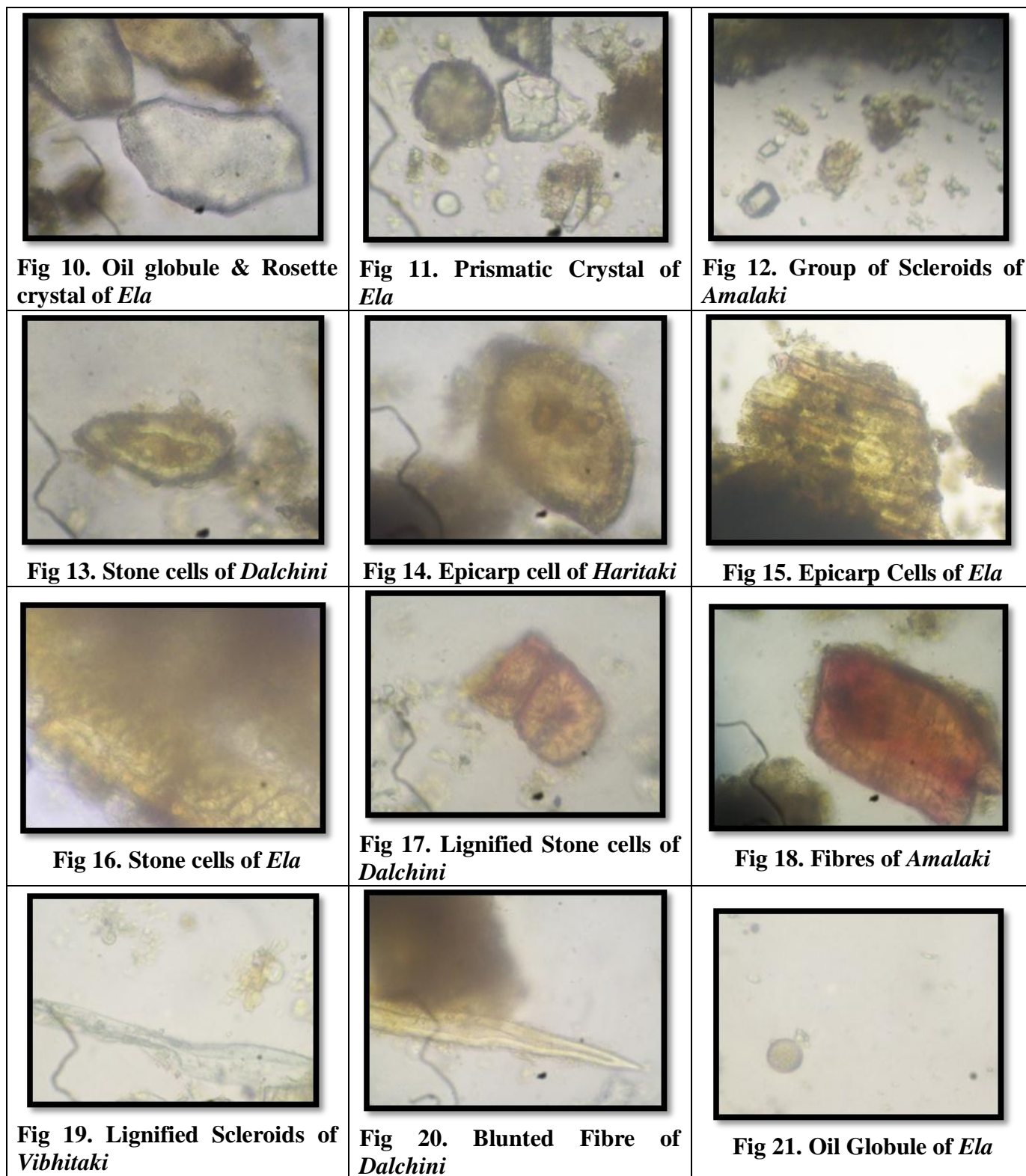
Table: 2 Organoleptic characters of APG

Sr. No.	Character	Results
1	Color	Greenish Black
2	Odor	Aromatic
3	Taste	<i>Kashaya</i> (Astringent)
4	Touch	Hard

Table: 3 Physicochemical parameters of *AAaditya Paka Guggulu*.

No.	Parameters/ Sample	APG
1.	Loss on drying	1.20% w/w
2.	Water soluble extractive	35.5% w/w
3.	Methanol soluble extractive	14.2% w/w
4.	Ash value	14.61% w/w
5.	Acid insoluble Ash	0.07% w/w
6.	pH value	6

Fig 1. Trichomes of *Vibhitaki*Fig 2. Fibres of *Dalchini*Fig 3. Cork cells of *Dalchini*Fig 4. Simple & Compound Starch Grains of *Dalchini*Fig 5. Silica deposition of *Amalaki*Fig 6. Scleroids of *Vibhitaki*Fig 7. Stone Cells of *Haritaki*Fig 8. Stone cells of *Vibhitaki*Fig 9. Black Debris of *Pippali*

Plate: 1 (Fig 1-21) Microphotographs of *Aaditya Paka Guggulu*

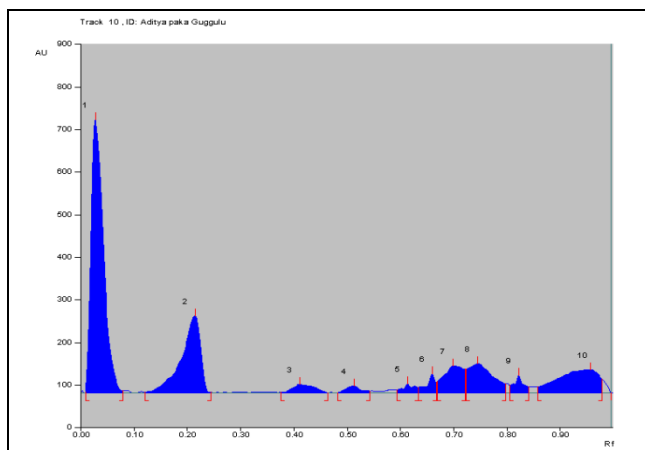


Fig 1. 254nm Peak display

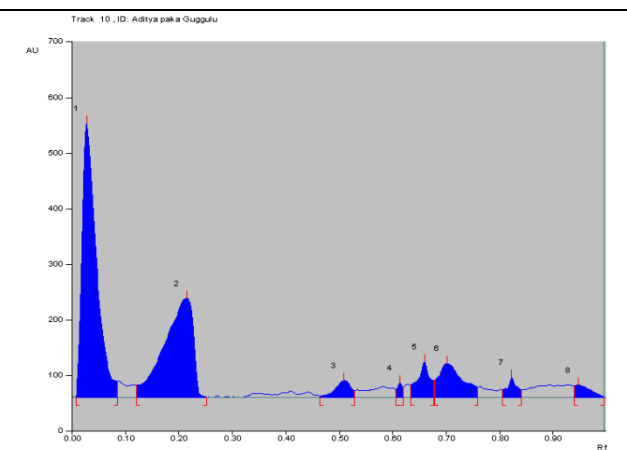


Fig 2. 366nm Peak display

Plate: 2. (Fig 1-3) HPTLC: at 254 & 366nm of APG

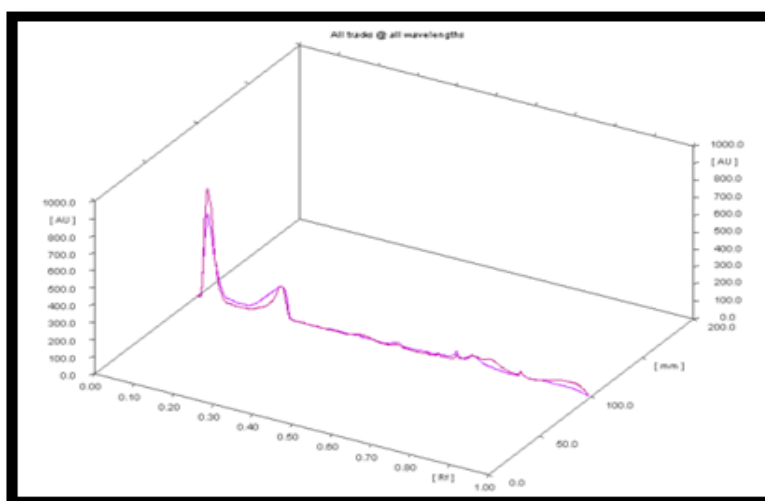


Fig: 3 254nm & 366nm 3D

CONCLUSION

Pharmacognostical study findings confirm that all characters were found in ingredient drugs of *Aaditya Paka Guggulu*. The physicochemical analysis are 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 *Aaditya Paka Guggulu*.

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