

Pharmacognostical and phytochemical assessment of modified *Rasayan yoga*-an ayurvedic polyherbal formulation

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Abstract

Modified *Rasayana Yoga* is an Ayurvedic polyherbal formulation specially made for Diabetic retinopathy. The modified *Rasayana Yoga* containing *Haritaki*, *Amalaki*, *Vibhitaki*, *Haridra*, *Guduchi*, *Musta*, *Yastimadhu* and *Vasa*. Diabetic retinopathy (DR) is leading cause for the blindness and one of the most important complication seen in patients with Diabetes mellitus. DR is the micro angiopathy involving retinal arterioles, venules and capillaries of the retina. The present study was under taken for standardization and authentication of compound Ayurvedic formulation by pharmacognostical and pharmaceutical evaluation to provide effective and safe drugs. The powder microscopy study of the sample showed scleroids, stone cells, silica deposition, trichrome, parenchyma cells, starch grain, pitted vessels, annular vessels, lignified fibers, diacytic stomata and fibers. The sample was subjected for various phytochemical parameters like water soluble extract, alcohol soluble extract, loss on drying, ash value, pH, Acid Insoluble Ash and HPTLC. This pharmacognostical and pharmaceutical result may the guidelines for standardization of formulation, modified *Rasayana Yoga*.

Keywords: HPTLC, rasayana yoga, pharmacognosy, pharmaceutical evaluation

1. Introduction

Rasayana therapy is essential for the treatment of *Pramehajanya Timira* because *Aacharya Charaka* has clearly mentioned that *Rasayana* is good for maintenance of *Dhatu* in the body ^[1]. *Rasayana* drugs are nourishing the body and help to rejuvenate the body and mind. Here we selected eight classically referred *Rasayana* drugs like, *Haritaki*, *Amalaki*, *Vibhitaki*, *Haridra*, *Guduchi*, *Musta*, *Yastimadhu* and *Vasa*. These drugs are *Deepana*, *Pachana* causing *Dhatvagni Deepana* thus help in digestion of *Ama* bringing about *Srotoshuddhi* and along with *Rasayana* activity which restores the body physiology. All the drugs are also having *Chakshushya*, *Pramehahara*, *Medohara*, *Raktavaha* *Srothoshodustihara*, *Vatanulomana* and *Sophahara* properties which were apt for combating the problem taken for the study. Diabetic retinopathy (DR), also known as diabetic eye disease, is a medical condition in which damage occurs to the blood vessels of the retina. Poorly controlled blood sugar is a most important risk factor ^[2]. It is a leading cause of blindness in developed countries. It is an important complication seen in the patient of diabetes mellitus (DM) ^[3]. The conventional treatment for DR is Intravitreal anti-VEGF drugs, intravitreal steroids, Laser therapy and Pars plana vitrectomy. These all are very

Costly and has many side effects. Hence it is necessary to find out the drug for DR which is effective, prevent the complications, manage all the seriousness of disease and less costly. Modified *Rasayana Yoga* is an Ayurvedic polyherbal formulation for Diabetic retinopathy. It acts at the level of *Rasayani Daurbalya* (weakness of structural and functional integrity of nutritive channels) which is seen in the pathogenesis of Diabetic retinopathy.

Present study, is focus to develop quality parameters of modified *Rasayana Yoga* on the basis of pharmacognostical study, physicochemical parameters and chromatographic evaluation. Hence, there is a need of standardization of quality parameters. Therefore, the present study was designed to evaluate the quality parameters of modified *Rasayana Yoga*

2. Materials and Method

Collection of drugs

All the raw drugs for modified *Rasayana Yoga* were procured from the pharmacy of Gujarat Ayurved University, Jamnagar. All the raw drugs were identified and certified for authentication by individual powder microscopy in the department of Pharmacognosy, I.P.G.T. & R.A., Jamnagar as per the guidelines of Ayurvedic Pharmacopoeia of India ^[4].

Table 1: Contents of modified *Rasayana Yoga*

Sr.No.	Drug	Botanical Name	Part Used	Quantity
1	Haritaki	<i>Terminalia chebula</i> Retz.	Fruit	1 part
2	Amalaki	<i>Emblicca officinalis</i> Gaertn.	Fruit	1 part
3	Bibhitaki	<i>Terminalia bellerica</i> Roxb.	Fruit	1 part
4	Haridra	<i>Curcuma longa</i> Linn.	Rhizome	1 part
5	Guduchi	<i>Tinospora cordifolia</i> [Thunb] Miers.	Stem	1 part
6	Musta	<i>Cyperus rotundus</i> Linn	Rhizome	1 part
7	Yastimadhu	<i>Glycyrrhiza glabra</i> Linn.	Root	1 part
8	Vasa	<i>Adathoda vasica</i> Nees.	Dried leaves	1 part

Preparation of drug

All the drugs of modified *Rasayana Yoga* were powdered separately and the powder was sieved through mesh size 85. All the drugs were taken in equal quantity and mixed together.

Organoleptic characters

It was done with the help of *Panchagyanendriya Pariksha* (Examination by the sense Organs). Organoleptic parameters such as colour, odour, taste, touch and texture of the finished products were observed and recorded [5].

Powder microscopy

For examining characters of the test powder, pinch of powder of test drugs was taken in neat and clean glass slide, covered by cover slip and then stained with phloroglucinol and hydrochloric acid to observe the lignification of the cell wall [6]. The sample was observed under compound microscope and photographs were taken. Drugs were studied under the Carl Zeiss Trinocular microscope attached with camera; the microphotographs were also taken under the microscope [7].

Physicochemical parameters

Modified *Rasayana Yoga* was analyzed using various standard physicochemical parameters such as loss on drying [8], pH value [9], water soluble extract [10], methanol soluble extract [11], ash value [12] is shown and HPTLC as per API at the pharmaceutical chemistry laboratory, IPGT & RA, Jamnagar [13].

3. Observations and Results

Organoleptic Characters

Organoleptic characters colour, odour, taste, touch and texture of modified *Rasayana Yoga* are shown in Table 2.

Table 2: Organoleptic Characteristics of modified *Rasayana Yoga*

Sr. No.	Characteristics	Results
1	Colour	Greenish Yellow
2	Odour	Aromatic
3	Taste	Astringent ends with sweet
4	Touch	Soft
5	Texture	Fine

Microscopic Characters of modified *Rasayana Yoga*

Diagnostic characters of modified *Rasayana Yoga* were observed under the microscope were scleroids and stone cells of *Haritaki*, silica deposition of *Amalaki*, stone cells and trichome of *Bibhitaki*, parenchyma cells and starch grain of *Haridra*, pitted vessels of *Guduchi*, annular vessels of *Musta*, lignified fibres and pitted vessels of *Yastimadhu*, diacytic stomata and fibres of *Vasa*. (Plate 1)

Physicochemical analysis:

Result of physicochemical analysis i.e. loss on drying at 110C, pH value, water soluble extract, methanol soluble extract, Ash value in Table 3.

Table 3: Physico-chemical parameters

Sr. No.	Parameters	Value of Modified <i>Rasayana Yoga</i>
1	Loss on Drying	2.4 % w/w
2	Ash Value	3.9 % w/w
3	Acid Insoluble Ash	1.92 % w/w
4	Water Soluble Extract	20.60 % w/w
5	Methanol Soluble Extract	25.08 % w/w
6	pH (5% aqueous)	6.0

High performance thin layer chromatography (HPTLC)

The colour and R_f value of resolved spots of HPTLC were noted. HPTLC Results of modified *Rasayana Yoga* showed 11 spots at 254 nm and 6 spots at 366 nm. Detailed results are depicted in the table 4. (Plate no. 2)

Table 4: R_f values obtained by HPTLC

Sample	Detection Condition	No. of spots	R _f value
Modified <i>Rasayana Yoga</i>	254 nm	11	0.01, 0.06, 0.14, 0.20, 0.25, 0.39, 0.46, 0.52, 0.56, 0.65, 0.82
	366nm	6	0.01, 0.06, 0.16, 0.20, 0.25, 0.59

Stone cells of *Haritaki*Trichome of *Bibhitaki*Silica deposition of *Amalaki*

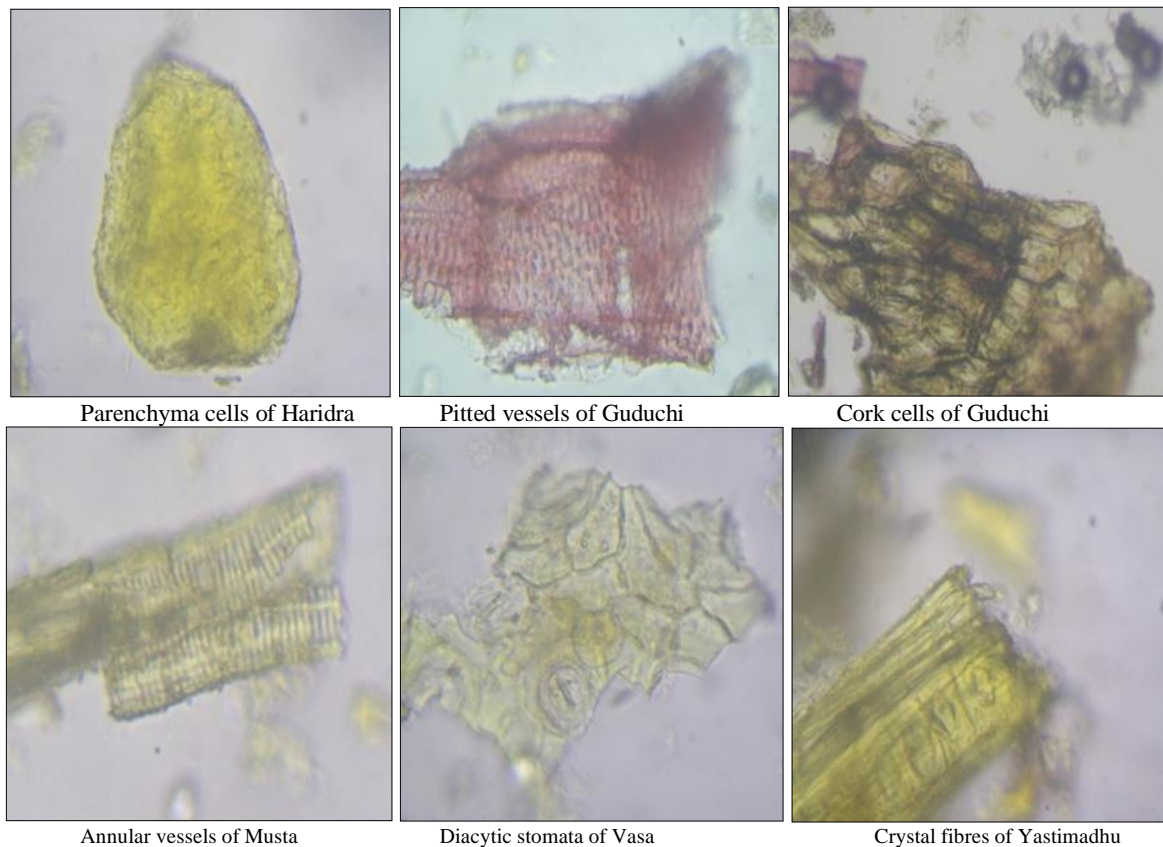


Plate 1: Powder microscopic photographs of modified *Rasayana Yoga*

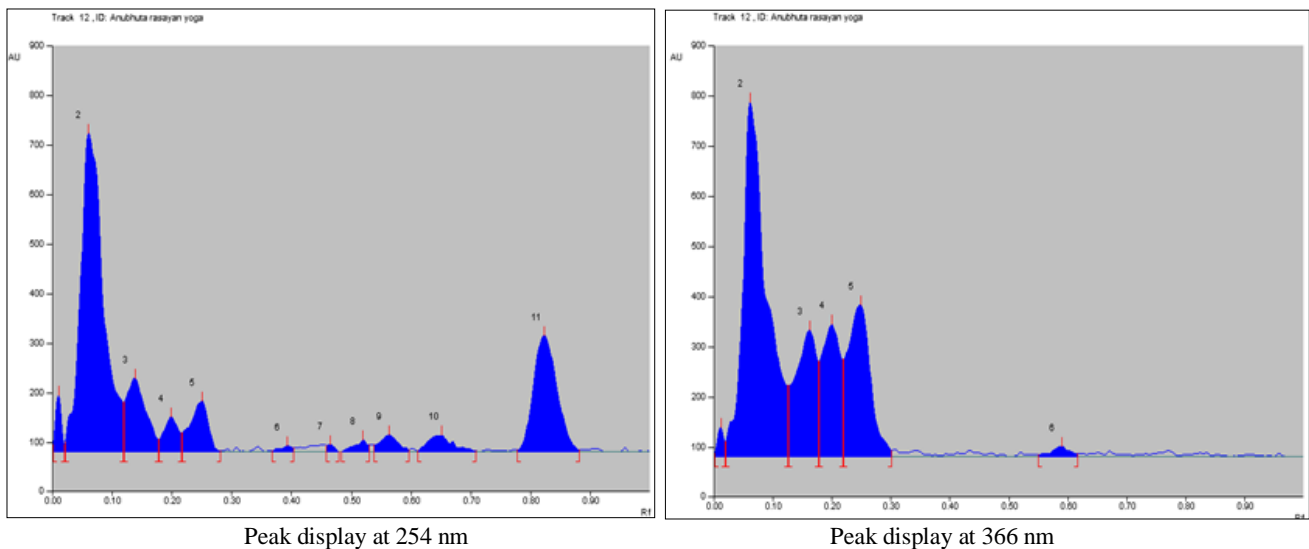


Plate 2: HPTLC of methanolic extract of modified *Rasayana Yoga* Observed under short UV Light

4. Discussion

Pharmacognostical evaluation of modified *Rasayana Yoga* showed that organoleptic characters of the sample were greenish yellow in colour, aromatic odor, astringent ends with sweet in taste, soft in touch and fine in texture. Microscopical evaluation of the drug disclose the presence of scleroids and stone cells of *Haritaki*, silica deposition of *Amalaki*, stone cells and trichrome of *Bibhitaki*, parenchyma cells and starch grain of *Haridra*, pitted vessels of *Guduchi*, annular vessels of *Musta*, lignified fibers and pitted vessels of *Yastimadhu*, diacytic stomata and fibers of *Vasa* were present. It shows that all the ingredients were present in the

finished product and it also proves the purity of the finished product.

Ash value is determining authenticity and purity of sample and also this value is important qualitative standards. Ash value of the sample is 3.9 % w/w indicates that the root is best for drug action and effects. Loss on drying of the sample is very low 2.4 % w/w prevent the bacterial, fungal and yeast infection. 6 pH of test drug indicates its alkali nature. Where the previous work with *Swarna Makshika Bhasma* showed somewhat same results but whereas the pH is low because of adding the *Bhasma* [14]. HPTLC results also showed that nearby 2 similar spots at both 256 and 366 nm.

5. Conclusion

The Pharmacognostical and Physico-chemical characters conforms that all the ingredient present in the modified *Rasayana Yoga* and formulation meets the maximum quality and purity standards of the drug. This may be useful in standardization and authentication of the drugs based on Pharmacognostical and Physico-chemical parameters.

6. Reference

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