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Research Article

PHARMACOGNOSTICAL AND PHYSICO-CHEMICAL EVALUATION OF *RASNA GUGGULU*

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ABSTRACT

Majority of patients visiting Ayurvedic hospitals are having ailments related to joints especially low back pain and knee joint pain. Low back ache may be due to many reasons ranges from muscular pain to complicated neurological complaints or malignancy. Disc herniation is also a major reason for low back ache in which radiculopathy might be a typical feature. In all systems of medicine many treatments exist to manage low back ache and sciatica. In Ayurveda also different treatment modalities are present ranging from simple internal medications to complex therapies like *Basti* (therapeutic enema), to effectively tackle such conditions. The Ayurvedic formulation, *Rasna guggulu* is mentioned in the treatment of *Gridrasi* (sciatica). To standardize any formulation its properties should be studied repeatedly in detail. Even though this formulation is comparatively a simpler one consisting of only 3 ingredients, its properties and identifying features are not widely studied. In this study pharmacognostical, organoleptic and physico-chemical characteristics of *Rasna guggulu* were reported. Pharmacognostical study of this drug reveals the presence of epidermal cells, starch grain, lignified stone cells, prismatic crystals, simple fiber, simple trichome, warty trichome, annular vessels and spiral vessels of *Rasna* along with oil globules of clarified butter. HPTLC shows 8 and 7 spots at 254nm and 366nm respectively which suggests the presence of 7 – 8 active principles in this drug. This study also can be considered to standardize the formulation, *Rasna guggulu*.

INTRODUCTION

Low back pain associated with radiculopathy happens commonly in disk herniation resulting in compression on nerve root. Sciatica is a serious health condition in which the patient may experience severe pain at low back, glueteal region and lower limbs especially in posterior side so that the patient may feel restrictions in movement.[1] Ayurveda explains a similar condition in which the patient may experience pain in *Kati* (low back), *Uru* (thigh region), *Janu* (knees), *Pada* (foot) in a sequential order. This condition is termed as *Gridrasi*. [2] So *Gridrasi* is often correlated as sciatica. Majority of the patients with acute low back pain associated with radiculopathy improves in few months. Spinal surgery is also advocated if all other treatment fails. [1]

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A therapeutically effective formulation which is also cost effective is very much essential for the management of chronic low back pain. *Rasna guggulu* is an Ayurvedic formulation specially indicated in *Gridrasi*.[3] It is a comparatively simpler combination consists of only 3 ingredients. The identifying features and physico-chemical parameters of *Rasna guggulu* are barely reported. In this study *Rasna guggulu* is prepared as per classical reference and its pharmacognostical as well as pharmaceutical study is being carried out.

MATERIALS AND METHODS

Collection of drug

The leaves of *Rasna* were collected from the surrounding locality of Jamnagar. [Plate 1, Fig 1] *Suddha guggulu* and cow's ghee were procured from Pharmacy, ITRA, Jamnagar. All these ingredients were authenticated at Pharmacognosy Department, ITRA, Jamnagar.

Preparation of Drug

The freshly collected *Rasna* leaves were washed and dried. It is then powdered into fine

powder. This fine powder of *Rasna* leaves, *Suddha guggulu* and cow's ghee taken in their appropriate ratio (Table 1) was thoroughly mixed. This mixture is then made into *Vati* (solid lumps) weighing 500mg each. The medicine is prepared at Pharmacy, ITRA Jamnagar.

Table 1: Ingredients and Quantity of Drugs Used for the Preparation of *Rasna Gugulu* [3]

S.No	Ingredients	Latin/English name	Parts used	Quantity
1	*Suddha guggulu*	*Commiphora wightii*	Resin	60 gm.
2	*Rasna*	*Pluchea lanceolata*	Leaves	48gm.
3	*Sarpi*	Clarified butter from cow's milk		Q.S.

Pharmacognostical Study

This includes organoleptic and microscopic study of *Rasna guggulu*. For this *Rasna guggulu* was powdered and used. The characteristics of this powdered sample were analyzed in Pharmacognosy laboratory, ITRA, Jamnagar.

Organoleptic Study

Safety and efficacy of the formulation is ensured by this study by authenticating the drugs used. It is done with the help of sensory organs. The details are enumerated in Table 2.

Microscopic Study

For this *Rasna guggulu* was powdered and mixed with water. Microscopy of this sample was done with and without stain. Microphotographs of the sample were also taken under Carl-Zeiss trinocular microscope.

Physico-Chemical Analysis

Physico-chemical parameters such as loss on drying, water soluble extract, acid soluble extract, ash value, acid insoluble ash, pH, relative hardness and HPTLC were performed. [4]

OBSERVATIONS AND RESULTS

Organoleptic Characters of *Rasna guggulu*

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

Table 2: Organoleptic Characters of *Rasna Guggulu*

S.No	Character	Result
1	Color	Coffee brown
2	Odor	Aromatic
3	Taste	Astringent
4	Touch	Hard

Microscopic characters of *Rasna guggulu*

Microphotographs of *Rasna guggulu* shows the presence of epidermal cells, starch grain, lignified stone cells, prismatic crystals, simple fiber, simple trichome, warty trichome, annular vessels and spiral vessels of *Rasna*. Oil globules of clarified butter/ghee was also observed. [Plate 2, Fig 1-10]

Physico-chemical characteristics of *Rasna guggulu*

Physico-chemical characteristics of *Rasna guggulu* are shown in Table 3.

Table 3: Physico-Chemical Characteristics of *Rasna Guggulu*

S.No	Parameters	Results
1	Average weight	538.4mg
2	Hardness	3.1 kg/cm^2
3	Loss on drying	3.48%
4	pH	6.5
5	Water soluble extract	41.53%
6	Alcohol soluble extract	12.36%
7	Ash value	15.07%
8	Acid insoluble ash	4.1%

Plate 1- Fig 1: *Rasna* leaves

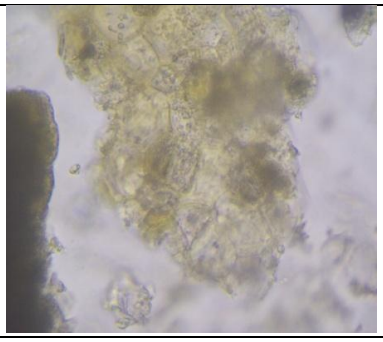
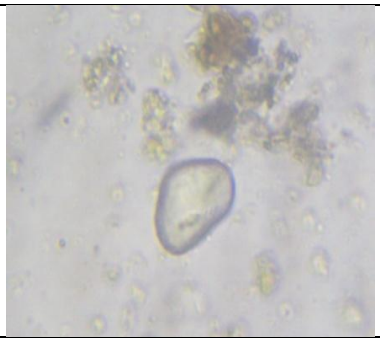
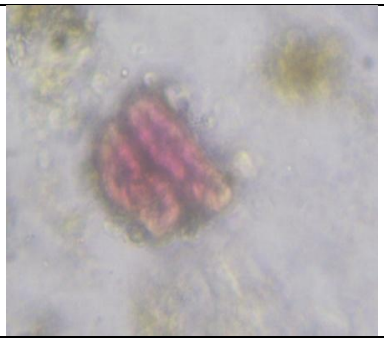
		

Fig 1: Epidermal cells of *Rasna*	Fig 2: Starch grain of *Rasna*	Fig 3: Lignified stone cells of *Rasna*

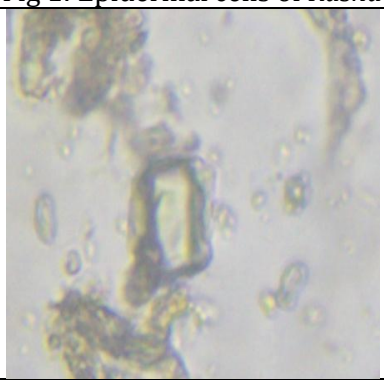
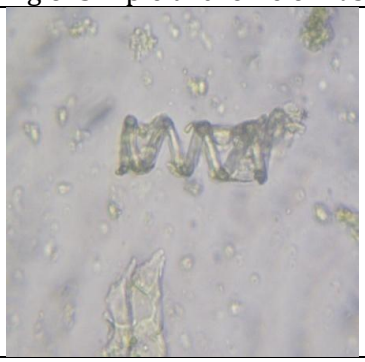



Fig 4: Prismatic crystals of *Rasna*	Fig 5: Simple fiber of *Rasna*	Fig 6: Simple trichome of *Rasna*
		
Fig 7: Warty trichome of *Rasna*	Fig 8: Annular vessels of *Rasna*	Fig 9: Spiral vessels of *Rasna*

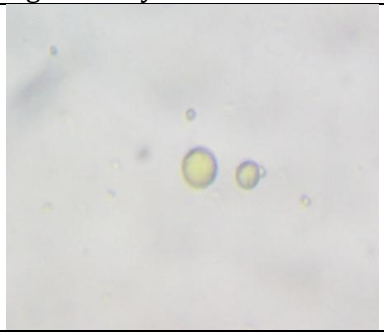



Fig 10: Oil globules of clarified butter/ghee		

Plate 2: Microphotographs of *Rasna guggulu*

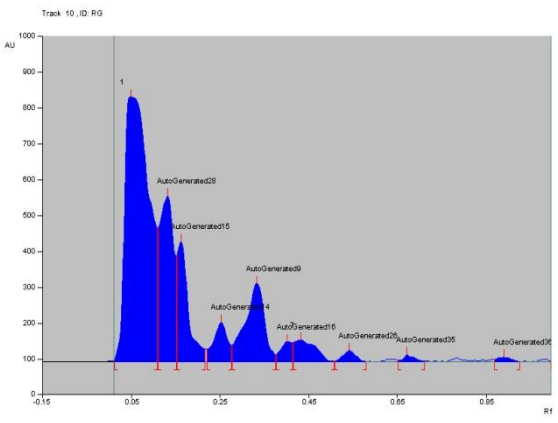


Fig 1: HPTLC peak display - 254nm

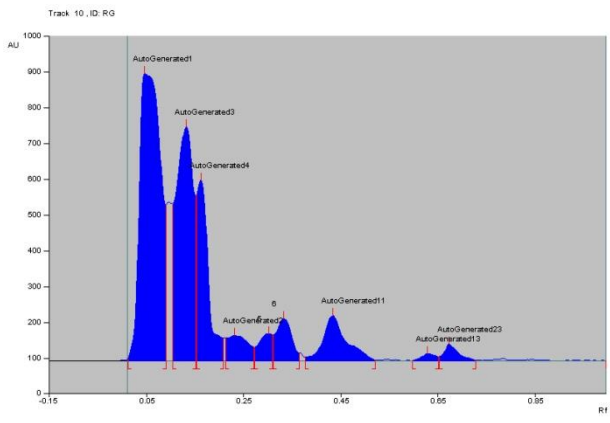


Fig 2: HPTLC peak display - 366nm

Plate 3: HPTLC peak display of *Rasna guggulu*

HPTLC study of *Rasna guggulu*

Chromatogram showed 08 prominent spots at 254nm with maximum Rf values 0.05, 0.13, 0.17, 0.26, 0.34, 0.4, 0.43, 0.55 and 07 prominent spots at 366nm with maximum Rf values 0.05, 0.13, 0.17, 0.23, 0.3, 0.34 and 0.44. [Plate 3, Fig 1 & 2]

DISCUSSION

Pharmacognostic evaluation of *Rasna guggulu* showed the characteristics of ingredients present in it. Lignified stone cells, epidermal cells, prismatic crystals, starch grain, simple fiber, simple trichome, warty trichome, annular vessels and spiral vessels of *Rasna* along with oil globules of ghee were observed. The physico-chemical parameters analysed such as hardness, loss on drying, water soluble extract, alcohol soluble extract, ash value, acid insoluble ash etc. were found to be within the normal reference range. HPTLC profile of methanolic extract of formulation showed 8 spots which may indicate the presence of 7 to 8 active principles in the sample.

CONCLUSION

The pharmacognostical and physio-chemical study suggests that the study sample of *Rasna guggulu* was prepared with authentic ingredients and it meets the qualitative standards. These parameters may be used as a standard for identification and quality assessment tools for *Rasna guggulu*.

Acknowledgements

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