

Short Communication

A comparative analytical study of *Prasarani* [*Merremia tridentata* Hallier. f. and *Paederia foetida* Linn.]

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Abstract

Prasarani is one of the drugs used in *Vata Rogas* such as *Amavata*, *Avabahuka*, etc. Among the different source plants of *Prasarani*, the plant *Merremia tridentata* Haller.f. is mostly used in South India and the plant *Paederia foetida* Linn. in North India, hence taken in the present work for comparative analytical study. It was observed that there is a common constituent (having 350 nm absorbance maxima) present in both the drug samples indicating that both works on a similar disease. It was also found that the whole plant powder sample of *P. foetida* has more number of constituents than that of *M. tridentata* which indicates *P. foetida* may have a better efficacy than *M. tridentata*.

Key words: HPLC, *Merremia tridentata*, *Paederia foetida*, phytochemistry, *Prasarani*

Introduction

Prasarani is one of the drugs used for *Vata Rogas* such as *Amavata*, *Avabahuka*, etc. References about *Prasarani* are found in *Charaka Samhita*,^[1] *Sushruta Samhita*,^[2] *Ashtanga Sangraha*,^[3] *Nighantus*, etc.

Two species are being used as *Prasarani* mostly in South India and North India^[4,5] viz,

- *Merremia tridentata* Hallier. f. (Convolvulaceae) [Figure 1].
- *Paederia foetida* Linn. (Rubiaceae) [Figure 2].

Therefore the present study has been undertaken to compare both the above drugs Analytically.

Materials and Methods

Aim of the study: To compare the the plants *Merremia tridentata* Hallier. f. and *Paederia foetida* Linn. under following parameters:-

1. Phytochemical Review
2. High Performance Liquid Chromatography (HPLC) Analysis
3. Colour Study
4. Determination of Ash Values

Phyto chemistry

a) *Merremia tridentata* Hallier. f. – Flavanoidis:- Diosmetin, Lutedin, dissmetin – 7-O-β-D- Glucoside.

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b) *Paederia foetida* Linn. - Paederoside, Paederosidic acid, γ-Lactone, Rutin, 7-O-xylosil glucose, scandoside, Deacetyl asperuloside.^[6-9]

Properties

Guna - Guru; Rasa - Tikta; Vipaka - Katu; Virya - Ushna; Doshaghna - Kapha-Vatashamaka^[10]

Determination of Ash values

Ash values of both the plants was analysed for the present study at I.I.C.T., Hyderabad [Table 1].

Colour study

The Colour Study was conducted for the present work at I.I.C.T., Hyderabad under ordinary light and U.V. light for different solvent extractions of both the plants [Table 2].

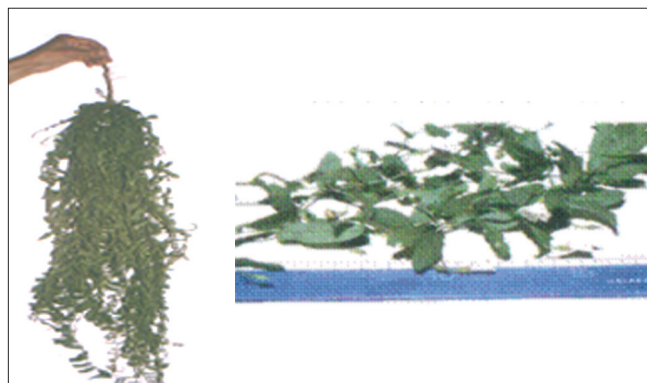


Figure 1: *Merremia tridentata* Hallier. f. plant with flowers

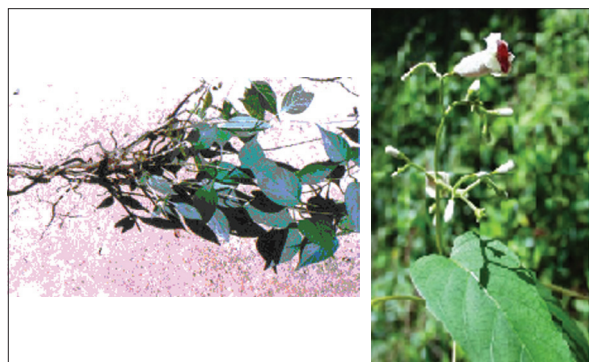


Figure 2: *Paederia foetida* Linn. Plant with flowers

Table 1: Physical analysis

Particulars	<i>M. tridentata</i>	<i>P. foetida</i>
Total Ash	Not more than 6.85%	Not more than 9.3%
Acid insoluble ash	Not more than 2.25%	Not more than 2.65%

Table 2: U. V. Analysis with different solvents

Solvents	<i>M. tridentata</i>		<i>P. foetida</i>	
	Ordinary Light	U.V. Light	Ordinary Light	U.V. Light
Acetone	Green	Orange	Dark green	Purple
Chloroform	Green	Orange	Green	Purple
Ethanol	Green	Orange	Green	Purple
Ethyl acetate	Light green	Orange	Green	Light purple
Methanol	Light green	Orange	Green	Purple
Distilled water	Orange	Dark green	Dark green	Purple
Plain	Greenish yellow	Light green	Green	Light green

HPLC analysis

HPLC analysis of samples of both the plants was conducted for the present study at I.I.C.T., Hyderabad.

The samples of whole plant powders and *Kwathas* (decoction) of both the plants were taken for chromatographic analysis before the clinical study.

In this present study, a HPLC with a gradient system of pumps (LC-IOATyp of Shimadzu); a Photo-diode Array Detector PDA (SPD-M10 A vp Shimadzu) and a software based data processor (Class-LC 10 vp Shimadzu) has been used. The model has been included with built-in-validation features.

Instrumental parameters like pump flow and detector wavelength were calibrated. For injection a 7725i-rheodyne injector has been used with 20 micro liter loop.

The samples of whole plant powder of both plant were extracted into aqueous alcohol. *Kwathas* were prepared freshly from both the samples and were also taken for analysis.

In the present analysis, a gradient elution with acetonitrile and

water was done from 40 to 70% acetonitrile. A chromatogram was monitored at 225 nm. The contour chromatogram of PDA detector has helped to select a suitable wavelength for chromatography.

Observations and Results

The chromatograms were found to contain constituents having a general absorbance maxima at 225 nm. All the chromatograms of whole plant powders and *Kwathas* of both the samples were printed at same wavelengths. It was found that the whole plant powder sample of *P. foetida* has more number of constituents than that of *M. tridentata*. This indicates that *P. foetida* could have a better efficacy than *M. tridentata*.

The U.V. spectra of *Kwatha* of *P. foetida* sample showed a constituent at 4.1 minute which was not found in the *M. tridentata* *Kwatha* sample. It was observed that *Kwatha* of *M. tridentata* sample also contain a good number of constituents. Hence the efficacy could be almost equal to that of *P. foetida*. It was observed that there is a common constituent present in both the samples having same absorption spectra at 350 nm absorbance maxima indicating a common efficacy of both the plants.

Discussion

HPLC Studies: In the present study, even though a thorough chemical analysis was not conducted, the samples under study were analysed on HPLC which is a excellent method for analyzing the natural products.

The common constituents (having 350 nm absorbance maxima) indicates that both the plants *M. tridentata* and *P. foetida* work on a similar disease. Even though the constituents between 0 and 10 minutes are found to be similar, the presence of the constituents between 20 and 30 are more in the plant *P. foetida* than in *M. tridentata* and hence makes the difference. Chromatographical studies were helped to monitor the commonality of chemistry between both the plants.

In the *M. tridentata* sample, three molecules at 45 minutes were with λ - max at 280 and 310 nm which were found to be absent in the plant *P. foetida*. And even though both the plants contain common constituents absorbing at 225 nm, *M. tridentata* appears to have more number of constituents absorbing in the range of 250 to 350 nms. This indicates that the plant *M. tridentata* may show more Balya property than the plant *P. foetida*.

In the present chromatographic study, the analysis helped to know the difference of efficacy between the two samples due to the variation of chemical constituents. The present method may hence be useful for the quality control of the above two plant species.

By the results obtained, it can be said that both the plants *M. tridentata* and *P. foetida* may be useful in treating the *Vatarogas*. It can be said that among the two, the plant *P. foetida* may be little more effective than the plant *M. tridentata*.

Conclusion

The plant *Prasarani* is in medicinal use since *Samhita* Period.

- HPLC studies helped to monitor the commonality of chemistry between both the plants
- It was observed that there is a common constituent (having 350 nm absorbance maxima) present in both the drug samples of *M. tridentata* and *P. foetida* indicates that both work on a similar disease.
- It was found that the whole plant powder sample of *P. foetida* has more number of constituents than that of *M. tridentata*. This indicates that *P. foetida* may have a better efficacy than *M. tridentata*.

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हिन्दी सारांश

प्रसारणी (मेरेम्मिया ट्रायिडेन्टाटा और पेडेरिया फ़ोटिडा) के रासायनिक संघटन का तुलनात्मक अध्ययन

एन. राजशेखर, पी. वसन्त, डी. विजयकुमार

प्रसारणी का प्रयोग प्राचीन काल से आमवात, अवबाहुक जैसे वात रोगों में होता आया है। दक्षिण भारत में मेरेम्मिया ट्रायिडेन्टाटा और उत्तर भारत में पेडेरिया फ़ोटिडा को प्रसारणी के रूप में उपयोग करते हैं। प्रस्तुत शोधपत्र में इन दोनों द्रव्यों के रासायनिक संघटन का तुलनात्मक अध्ययन किया गया है। इस अध्ययन में दोनों द्रव्यों में एक जैसा पाया गया रासायनिक घटक (३५० एम.एम.एब्सोर्बेन्स माक्सिमा) इन दोनों औषध वनस्पतियों के एक ही प्रकार के रोग में उपयोग को सूचित करता है। अधिक रासायनिक घटक होने से पेडेरिया फ़ोटिडा द्वारा अधिक लाभ मिल सकता है।