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**Phytochemical screening of *Soymida febrifuga* Roxb. (Meliaceae)
root bark**

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Abstract

Soymida ferifuga commonly known as *mamsarhohini* of family meliaceae is a reputed folk medicinal plant. Its root bark extensively used in treating leucorrhoea, menorrhagia, dysmenorrhoea. For the first time root bark was subjected investigate its phytochemical investigations. The present research work is aimed to evaluate the plant phytochemically by carrying out various physicochemical parameters like LOD, ash value, extractive value, phytochemical screening including HPTLC fingerprint. The physicochemical parameter shows that all the values are within the quality range. Phytochemical screening shows presence of alkaloid, tannins, glycosides etc chemical constituents. HPTLC fingerprint shows the separation of maximum number of chemical moieties, based upon the findings it can be concluded that the test parameters can be used as identification tool for this plant and further research work can be done based upon these parameters.

Key-Words: *Soymida febrifuga*, Mamsarohini, root bark

Introduction

India has one of the oldest, richest and most diverse traditional medicine cultures in the world. The tribal folks spread across the country make use of medicinal plants through oral traditions. Millions of households, particularly in rural areas, use medicinal plants for self medication, for preventive, promotive and curative applications. The traditional system of medicine and the folklore depend on higher plants for their medicinal preparation. In India several thousands of plant species are being used by thousands of ethnic communities. A Tribal claim was recorded for *mamsarohini* is the management of leucorrhoea, menorrhagia and dysmenorrhoeal¹, reported the utility of *Mamsarohini* in muscular dystrophies. The bark decoction *Mamsarohini* is found to be (50 ml twice daily) effectively reduced the CPK levels in 2 cases of DMD². The wound healing properties of stem bark are reported. No reference regarding phytochemical investigation on any part of *Soymida febrifuga* Roxb. is being reported till date.

Material and Methods

Collection

For procuring best quality of the drug it is necessary to collect roots from the natural habitat, after plant maturity, and in proper season. The drug was collected as per guidelines of collection.

Organoleptic characters:

The Organoleptic characters of Ayurvedic drug is very important and gives the general idea regarding the genuinity of the sample. This also corresponds to *Panchagnanendriya pariksha* of Ayurveda. The characters like color, odour, taste and consistency of the sample were noted. Color (Rupa) Odour (Gandha) Taste (Rasa) Texture (Sparsha)

Physicochemical parameters^{3,4,5,6,7,8,9}

Physico chemical parameters such as determination of loss on drying, determination of total ash, determination of acid insoluble ash, determination of extractive value, alcohol soluble extractive value, and water soluble extractive and pH values are recorded as per standard.

Qualitative test¹⁰

Series of tests were performed in this section to identify the presence of different chemical constituents such as alkaloids, tannins, saponin etc. as per standards.

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Quantitative estimation

Test drug was subjected to quantitative estimation of Tannin.

Chromatographic study^{11, 12, 13}

TLC STUDY

Thin layer chromatography has frequently been used for the separation and the semi quantitative analysis of natural compounds. TLC also enables for evaluation of phytochemical constitute of herbal drugs. TLC monograph of individual drug is used for identification of single drug with reference standard compound and by recording the fingerprinting profiles.

HPTLC study

High performance thin layer chromatography (HPTLC) is a sophisticated and automated form of TLC. H.P.T.L.C is an invaluable quality assessment tool for the evaluation of botanical materials. It allows for the analysis of a broad number of compounds both efficiently and cost effectively. Additionally, numerous samples can be run in a single analysis thereby dramatically reducing analytical time. With HPTLC, the same analysis can be viewed using different wavelengths of light thereby providing a more complete profile of the plant than is typically observed with more specific types of analyses. Performing thin-layer chromatographic separation on HPTLC layers has several advantages over those on conventional layers.

Results and Discussion

Organoleptic Characters:

Organoleptic characters of *S. febrifuga*. root bark powder was carried out and the results are depicted in the table no.-1

Physico-chemical parameters:

Physicochemical parameters of *Soymida febrifuga* root bark powder was tested using various Physico-chemical analysis such as moisture content, ash value, acid insoluble extracts and pH value was also estimated. The observed results are shown in the table no.-2

Preliminary qualitative Chemical tests:

Root bark sample was qualitatively tested for the presence of different phytoconstituents like alkaloids, phenols, flavanoids, carbohydrate saponin, tannins and cyanogenic glycosides etc. The observed results are shown in the table no.-3

Quantitative estimation

Root bark powder of *Soymida febrifuga* was subjected to estimate quantitatively, tannins the observed results are shown in the table no.-4

HPTLC

Solvent system: N- Butanol, acetic acid, water (4:1:5)

Sample: Chloroform extract of root bark

Detection: Long UV 366 nm, Short UV 254 nm

Spray reagent : Vaniline Sulphuric acid spray reagent.

Chromatographic techniques were carried out on mentioned in materials & methods section. Solvent system which were designed for TLC i.e. N- Butanol: water: Acetic acid (4:1:5) was used for HPTLC studies. The results are tabulated as under. Table no.-5. The results for all the physicochemical parameters are within the prescribed limit. It means that quality of the drug is up to the standard.

As describe in analytical study, the test drug give the positive test for the presence of alkaloids, phenols, flavanoids, carbohydrate, saponin, tannins, cynogenic glycosides.

Quantitative estimation of bark powder shows presence of 9.44% w/w tannin.

HPTLC study shows that all the spots are of same R_f values when scanned at two different wavelengths as 254nm (short U.V.) & 366nm (long U.V.)

References

1. K. Hemadri, A Treatise on Tribal medicine, Dr. Koppula Hemadri's house of tribal medicine, Vijayawada. 2011: 22.
2. Illustrated Dravyguna vijnana, Dr. J.L.N Sastry. 3rd edition 2008, Chowkhamba orientalia, Varanasi. 667
3. API part I, Appendix 2, Vol. V 2.2.2
4. API part I, Appendix 2, Vol. V 2.2.10
5. API part I, Appendix 2, Vol. V 2.2.3
6. API part I, Appendix 2, Vol. V 2.2.4
7. API part I, Appendix 2, Vol. V 2.2.5
8. API part I, Appendix 2, Vol. V 2.2.8
9. Anonymouis (2001). The Ayurvedic Pharmacopia of India, Ministry of Health and Family Welfare, Part I, Vol. II, Ed. I. P s46-47.
10. Khandelwal, K.R. techniques and experiments practical Pharmacognosy, Nirali Prakashan, Pune.
11. S.Ravishankar, 2001, Textbook of Pharmaceutical Analysis, Ootacamund, Rx Publication
12. William H., (Edi) official methods of analysis, Association of Official Agricultural chemists, Washington, 4th Ed., 1960.
13. A.V.Kasture, S.G.Wadodkar, K.R. Mahadik, H.N.More, Pharmaceutical analysis, Industrial Methods Vol.II, Nirali Prakashan.

Table 1: Organoleptic Properties

| Characters | Observation |
|------------------|-----------------------|
| Colour | Brownish red |
| Taste | Astringent |
| Odour | Astringent ends sweet |
| Nature of powder | Smooth |

Table 2: Physicochemical parameters of *S. febrifuga* root bark powder

| S/ No. | Physicochemical Parameters | <i>S. febrifuga</i> |
|--------|-------------------------------------|---------------------|
| 1. | Loss on Drying at 105°C (% w/w) | 17.90% |
| 2. | Ash value at 450°C (% w/w) | 4% |
| 3. | Acid insoluble ash at 450°C (% w/w) | 5% |
| 4. | Extractive Value | |
| (i) | Water soluble extractive (% w/w) | 18.40% |
| (ii) | Alcohol soluble extractive (% w/w) | 18.46% |

Table 3: Qualitative chemical screening of *S. febrifuga* root bark powder

| Phytoconstituents | Tests | Observation |
|-----------------------|---------------------------|-------------|
| Alkaloids | Mayer's Test | ++ |
| | Dragendorff's Test | ++ |
| | Wagner's Test | ++ |
| Phenols | neutral FeCl ₃ | ++ |
| Flavanoids | Shinoda's test | ++ |
| Carbohydrate | Fehling's test | ++ |
| Saponin | Foam test | ++ |
| Tannins | Lead acetate test | ++ |
| Cyanogenic glycosides | sugars Molisch's test | ++ |

Table 4: Quantitative estimation

| S/No. | Sample | % of Tannin |
|-------|----------------------------|-------------|
| 1. | <i>S. febrifuga</i> sample | 9.44 % |

Table 5: HPTLC Studies of chloroform extracts at 254nm and 366nm

| Root bark | Detection | No. of spots | Rf value |
|-----------|-------------|--------------|-------------------------------|
| | 254nm | 6 | 0.07,0.18,0.20,0.34,0.80,0.95 |
| | 366nm | 5 | 0.09,0.18,0.20,0.88,0.95 |
| | After spary | 3 | 0.18,0.20,0.95 |

