RESEARCH ARTICLE

ASSESSMENT OF QUALITY OF THE RAW DRUG MARKET SAMPLES OF *PSEUDARTHRIA VISCIDA* (MOOVILA) COLLECTED FROM KERALA HERBAL MARKETS

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Abstract: Plants, especially medicinal plants play an important role in the plant resource spectrum of Kerala. Out of estimated 4600 flowering plants in Kerala, about 900 possess medicinal values. Many medicinal plants are either endangered or on the verge of extinction due to over exploitation. *Pseudarthria viscida* (L.) Wight and Arn is an important medicinal plant from the family Fabaceae which is one among the famous "Dasamoola" (10 roots) plants and is a major component in many ayurvedic preparations. Its roots are used in the treatment of a wide variety of ailments being anti helminthic, antifungal, anti inflammatory, antioxidant, antitumor, aphrodisiac, astringent, bitter, cardiotonic, digestive, diuretic, emollient, febrifuge, hypotensive as well as rejuvenating in nature. Increasing demand for this drug has naturally lead to adulteration or substitution in market raw drug samples. This study presents the results of quality analysis of the raw drug market samples of *Pseudarthria viscida* roots collected from different herbal markets of Kerala. Fifteen percent of the analysed samples were found as spurious.

Keywords: Adulteration, *Pseudarthria viscida*, Moovila, Thin layer chromatography (TLC)

INTRODUCTION

Pseudarthria viscida (L.) Wight and Arn., commonly called as Moovila in Malayalam and Chapakno in Hindi, belongs to the family Fabaceae. This medicinal plant that grows well in the soil, up to a height of 60 cm having three leaves on one stalk, hence the name Moovila (Fig.1.). It is one among the famous Dasamoolam (10 roots) plants and is the major ingredient in many ayurvedic formulations like dasamoolarishtam, dasamoolaharithaki, dasamoola panchakolam, dasamooladi lehyam, chavanaprasam etc. The availability of fresh raw drug material is decreasing as cultivation is meager but usage is increased. Scarcity of genuine materials from wild and practically no cultivation as in many other species, lead to chances for adulteration/substitution which is the major problem faced by the herbal drug industry at present. Correct identification of a true raw drug sample from a spurious one is also of course a hurdle (Deepa *et al*., 2004, Indoria and Verma, 2020 and Saran *et al*., 2015).

Chromatographic fingerprinting is in use for evaluation of herbal drugs on a phytochemical marker basis for standardization and for quality control of both the raw material as well as the finished products in drug industry. Such a chromatographic profile which is distinct and unique can be used for a raw drug material as an identity card, especially when specific chemical markers are not available for analysis (Li *et al*.,1998 and Harborne, 1998). In this context we have taken up a study to assess the present scenario of *Pseudarthria viscida* roots sold in the raw drug market of Kerala by the comparative analysis of the genuine sample and market samples of *Pseudarthria viscida* roots collected from different parts of Kerala. The results of the study are discussed in this paper.

MATERIALS AND METHODS

The genuine plant samples of *Pseudarthria viscida* root was collected from College of Agriculture, Kerala Agricultural University, Thrissur campus and authenticated by botanist. The samples were cleaned, shade dried and powdered. Ten grams fine powder of each of the samples was extracted with 100 ml acetone in soxhlet extractor. It was filtered, concentrated by evaporation under vaccum and was used for developing chemical fingerprint by TLC (Thin Layer Chromatography). Market samples of *Pseudarthria viscida* roots were purchased from the herbal raw drug venders of different districts of Kerala. Total 20 market samples were purchased. Acetone extracts of these market samples (10g/100ml) were prepared as in the case of genuine samples and used for developing TLC fingerprint. Pre-coated flourescent silica gel 60 F_{254} plates were used as the stationary phase. Solvent system suitable for separation of components was standardized as 9.3: 0.7., Toluene: Ethyl acetate by trying different combinations of organic solvents in varying proportions. The plates were developed up to a length of 8 cm in a CAMAG glass twin trough

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chamber (10 x 10 cm), previously saturated with the solvent systems for 15 minutes. After removal from the mobile phase, the plates were left to dry and viewed under UV-366 nm. The nature of spots and their R_f values were recorded and the TLC fingerprints of market samples were compared with that of reference standards of genuine samples to see the phytoequivalence (Wagner and Bladt.,1966).

RESULTS AND DISCUSSION

The chromatographic profile developed from genuine plant root sample of *Pseudarthria viscida* (Fig.2) was taken as reference standard. Comparative analysis of the reference TLC fingerprint profile of genuine sample with that of market samples were done. It showed that 17 samples out of 20 samples matched with *Pseudarthria viscida* reference chromatogram whereas other three samples did not match with the reference profile of *Pseudarthria viscida* root (Figure. 3.1 and 3.2.). They showed different band patterns proving that the samples are mixtures or spurious samples. The TLC method explained here is quick, completing within 30-40 minutes. Hence this methodology can be effectively employed for quality evaluation of the root raw drug samples of *Pseudarthria viscida*. This study also revealed the current raw drug market scenario in Kerala with respect to *Pseudarthria viscida* roots in sale. Fifteen percentage of the market samples analysed were not genuine whereas, 85% of the samples were genuine samples. Details of the markets from where samples collected and the inference obtained in the study are given in Table 1. and Table 2.

Table 1. Quality analysis result of *Pseudarthria viscida* root market samples from Kerala

Total root samples analysed (No:)	**Number of samples identified as genuine *Pseudarthria viscida* root**	**Number of samples identified as spurious**
20	**17 (85%)**	**3 (15%)**

Table 2. Details of market samples and the observation after quality evaluation

Sample code No:	**Market drawn**	**Observation**
PV 1	Thrissur 1	Genuine sample, *Pseudarthria viscida* root
PV 2	Thrissur 2	Genuine sample
PV 3	Thrissur 3	Genuine sample
PV 4	Ankamaly	Genuine sample
PV 5	Kunnamkulam	Genuine sample
PV 6	Kottayam	**Spurious**
PV 7	Muvattupuzha1	Genuine sample
PV 8	Muvattupupzha2	Genuine sample
PV 9	Muvattupupzha3	Genuine sample
PV 10	Kodakara1	Genuine sample
PV 11	Kodakara2	Genuine sample
PV 12	Kozhikode1	Genuine sample
PV 13	Kozhikode2	Genuine sample
PV 14	Ernakulma1	Genuine sample
PV 15	Ernakulam2	Genuine sample
PV 16	Wadakkanchery	**Spurious**
PV 17	Chalakkudy1	Genuine sample
PV 18	Chalakkudy2	Genuine sample
PV 19	Chalakkudy3	Genuine sample
PV 20	Ottappalam	**Spurious**

CONCLUSION

From the results of this study, it can be concluded that spurious samples of *Pseudarthria viscida* roots appear in trade in the herbal raw drug markets of Kerala. Fifteen percentage of the market samples analysed in the study were spurious whereas, 85% of the samples were found as pure root samples of Moovila. The TLC tool presented in this paper may be used effectively to establish the authenticity of *Pseudarthria viscida* roots in trade and may be helpful to differentiate the drug from spurious drug materials.

Fig.1.*Pseudarthria viscida* plant

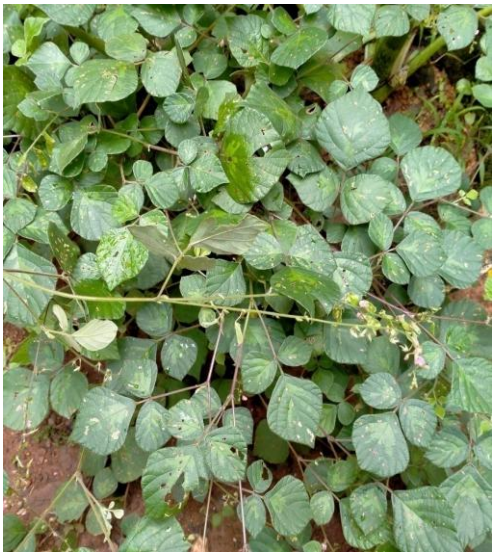
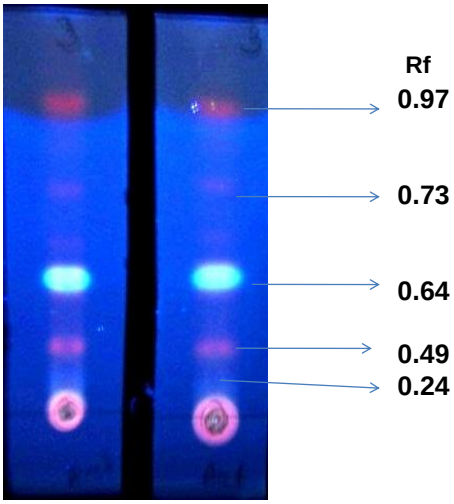
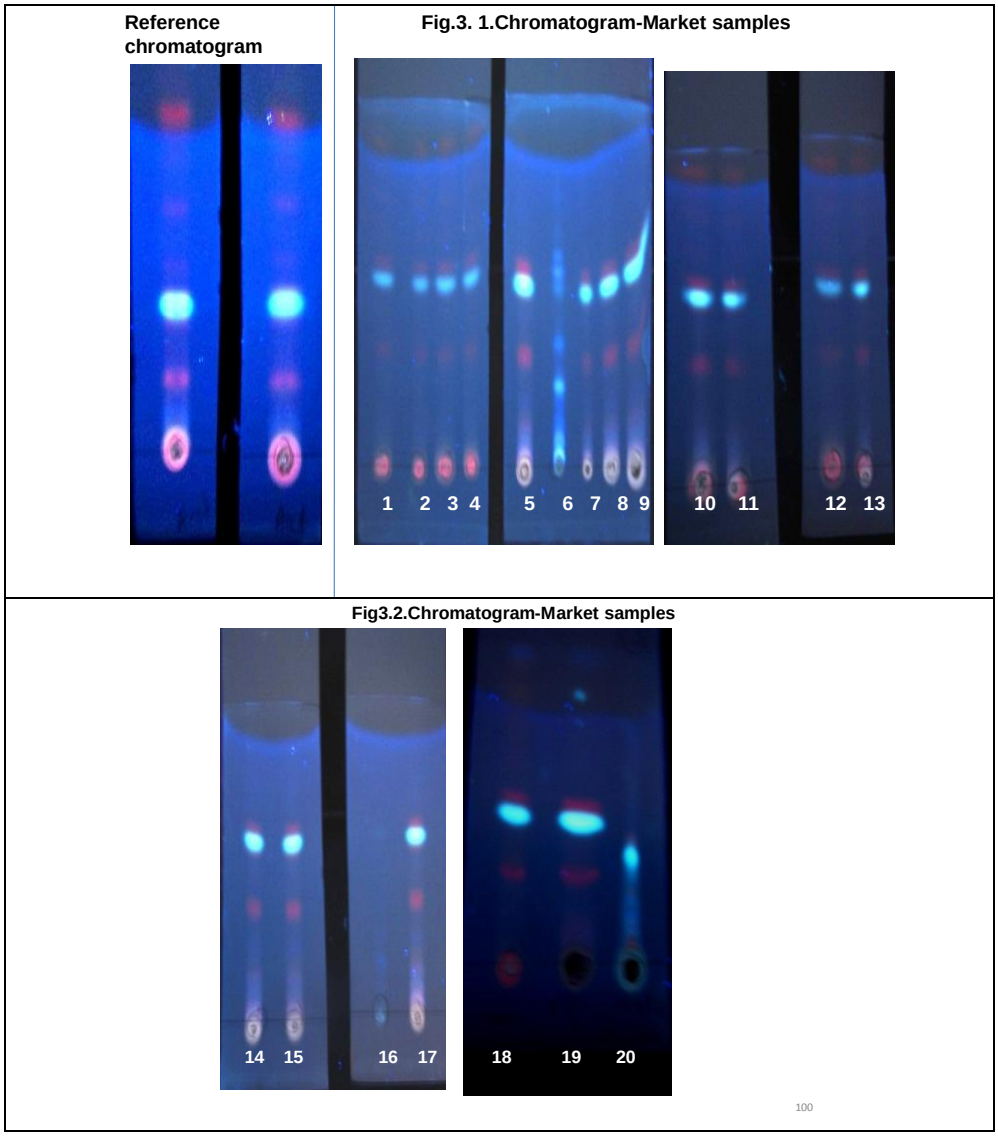


Fig. 2.Reference chromatographic fingerprint of *P.viscida* genuine root



TLC, Acetone extract , 9.3:0.7 Toluene: Ethyl acetate ,UV-L ,Silica gel 60 F_{254}



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