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RUNNER-UP

Raj nibhai V. Patel

**PharmInnova
Award**

Best M. Pharm Thesis

Runner-Up



Ms. Rakhi Khabiya

Research Guide



Dr. Sheetal Anandjiwala

Subject:

Pharmacognosy

Thesis Title :

Identification of some phyllanthus species of Gujarat State, using integrative Taxonomy

College:

NIPER, Ahmedabad

Research confirming role of Bhuiamla as protective agent for liver

Outcome of Research

Phyllanthus (Bhuiamla) species are considered to be an excellent protective agent for the liver in Indian System of Medicine (Ayurveda). However, a great deal of confusion exists regarding the identification of *Phyllanthus* species. This study focused on the adoption of 'Integrated Taxonomy' (a combined approach of Classical-, Chemo- and Gene taxonomy) for the identification of the most efficacious *Phyllanthus* species. The biomarkers – *phyllanthin*, *hypophyllanthin* and *niranthin* are present in good amounts only in leaves of *P.amarus* (Jar-Amla), which can be used in marketed formulations to get maximum therapeutic efficacy. This approach can be further exploited for the identification of other herbals.

Thesis Title: Identification of some *Phyllanthus* species of Gujarat using integrative taxonomy

ABSTRACT

Different species of *Phyllanthus* are considered to be very effective hepatoprotective agents in the Indian Indigenous Systems of Medicine. However, great deal of confusion exists among scientists regarding identification of *Phyllanthus* species. Hence identification of *Phyllanthus* species using “Integrative Taxonomy” is highlighted. Nine species of *Phyllanthus* were collected from Valsad District of Gujarat. Morphological and anatomical characters were assessed and a simple key developed. Identification through morphological and anatomical study becomes difficult when the species are in dried, powdered and in mixture form. Further, TLC fingerprint profile and Co-TLC of methanolic extract of *Phyllanthus* species with phyllanthin, hypophyllanthin and niranthin was developed. Method was developed and validated for simultaneous quantification of phyllanthin, hypophyllanthin and niranthin by TLC densitometry. Since these compounds were not detected by HPTLC in all the species, RP-HPLC method was developed and validated. Moreover, gallic and ellagic acid were also quantified by TLC densitometric method to identify *Phyllanthus* species based on the amount of chemical markers. Gallic acid and ellagic acid were present in all the species except *P. acidus*. Phyllanthin, hypophyllanthin and niranthin were present in good amount only in *P. amarus*. Hence, *P. amarus* should be used in marketed formulations to get maximum therapeutic efficacy as reports are there for hepatoprotective activity of Phyllanthin. But the major problem with *P. amarus* is its admixture with morphologically similar species viz. *P. fraternus* and *P. urinaria*. Hence, AFLP fingerprint profile of these species was developed with 36 primer combinations. Best fingerprint profiles and polymorphic bands which could distinguish these 3 species were identified. Authentication and identification of species from extract is not possible through DNA fingerprint profile and it can be done only on the basis of phytochemical analysis. Thus, any technique alone is not complete in identification of *Phyllanthus* species. Hence, all the three techniques should go hand in hand and be integrated to identify *Phyllanthus* species.