Traditional phytomedicines in Dhule and Nandurbar Districts (Maharashtra: India) vis-à-vis doctrine of signatures

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Abstract
The untapped traditional plant-based medicinal knowledge of tribals of Dhule and Nandurbar districts (Maharashtra, India) forms the subject matter of this paper. It is also aimed at finding out support to the ‘doctrine of signatures’ as hailed from these observations. Regular visits were paid to gather information and verify claims after repeated enquiries amongst the tribal villages and hamlets. A questionnaire was prepared to jotted down the data adduced during visits. On certain occasions, open discussions were also held for cross-checking. The plant species are deciphered using district and state floras. The present author noted 26 medicinal plant species belonging to 26 genera and 22 angiospermic families. Various plant parts or products are employed in the form of paste, powder, extract, juice, decoction, infusion etc. These, if assessed on modern scientific lines, would add new drugs and help to better human life. The various signs or signatures were divulged during discussions. The said doctrine stands true although in limited cases. This is probably so because of acculturation in the districts. Interestingly, the local plant names signify the same claims as the respective plant species in vogue. Another point of interest is the similarity of signatures in cases of Ayurvedic medicinal plants and the presently studied few species.

Citation:

1. Introduction

1.1 Geographical location
Dhule and Nandurbar districts are situated at the north-western border of Maharashtra state (India). They extend between 73°47′ and 75°11′ east longitude and 20°38′ and 22°3′ north latitude (Map-I & II). Dhule district is comprised of four administrating tehsils, whereas Nandurbar district has six tehsils.

1.2 Forests
In both districts, the forests cover an area of 4732.199 sqkm. The forests are tropical dry deciduous type. They are divided into four subtypes viz., Tectona grandis forest type, Acacia chundra type, Hardwickia binata type and scrub type.
1.3 People
Major livelihood is farming. The hilly people also depend partially on forest products. The tribal people such as Pawara, Bhil, Kokani, Mavachi etc. constitute about 41% of total population. They have their own ways of sustenance and medicaments.

1.4 Need of Research
The present author investigated this region floristically (Patil, 2003) and also paid attention to traditional utility of the plant wealth in the area in the last nearly one and half decade. Author being resident of this region, is well conversant with local dialects and hence successfully completed enquiries into plants of it. A traditional medicine was the main emphasis while studying them.

1.5 Aim
The present paper informs about the origins of traditional phytomedicine in the perspective of ‘doctrine of signatures’ based on own study.

1.6 Layout of Presentation
Plant species are arranged alphabetically. The enumeration includes valid botanical name, family in parenthesis and local plant names. Uses are presented separately below. Special notes in view of doctrine of signatures are provided for each medicinal utility. Plants species were determined using Floras (Patil, 2003; Kshirsagar and Patil, 2008; Cooke, 1958).

2. Objective of Research
During ethnobotanization in Dhule and Nandurbar districts (Maharashtra, India), the tribal people provided clues in selecting plant species or their parts to employ them as medicine. Their information exactly match with/supports doctrine of signatures. This doctrine is focussed more rather than simply ethnomedicinal utilities. This has been also the experience of the authors in others parts of this region and people. This has been conceptualised by the present author (Goel and Tripathy, 2009). The present communication is also on the same line, apart from tapping usual tapping of ethnomedicinal utilities in the said region.

3. Observations on Medicinal Utilities and Their Signatures
1. **Achyranthes aspera** L. 
   (Amaranthaceae) Aghada:
   **Use:** Inflorescence is burnt. The ash obtained is dissolved in water. About 10-15 ml is taken orally 2-3 times a day against scorpion sting.
   **Note:** The elongated inflorescence is spiny and also curved like a sting of scorpion.

2. **Albizia lebbeck** (L.) Willd. (Mimosaceae) Shirish:
   **Use:** Paste of flowers homogenized with wheat flour. It is applied around mammary glands of a mother to help purify milk for a fortnight.
   **Note:** White flowers of this taxon are thought beneficial for purification of milk, which is also white.

3. **Ammannia baccifera** L. ssp. baccifera Clarke (Lythraceae) Umrya:
   **Use:** Entire plants are crushed to obtain juice. About 15-20 ml of it is administered orally at night to check body heat till cure.
   **Note:** The plant species being habitat of water places, which is thought cooling for a body.

4. **Aspidopterys cordata** (Heyne ex Wall.) A. Juss. (Malpighiaceae) Shrivel:
   **Use:** Latex of the plant is applied to rice grains. These grains are consumed by a mother for few days to increase lactation.
   **Note:** White latex is yielded by this species which is a signature for white milk.

5. **Bacopa monnieri** (L.) Penn. (Scrophulariaceae) Bam:
   **Use:** Plant extract, about a glass, is drunk at night after meal to reduce body heat.
   **Note:** The species grows in watery, cooling habitat. It is noted in its medicinal application.

6. **Baliospermum raziana** Keshav et Yog. (Euphorbiaceae) Danti:
   **Use:** Seeds are boiled in water. Decoction obtained, about a cup, is drunk after snake bite. It is advised 3-4 times at the interval of about two hours.
   **Note:** The seed coats are variegated like some species of snakes. Their resemblance is denoted.

7. **Bambusa arundinacea** (Retz.) Willd. (Poaceae) Bamboo:
   **Use:** Young culms are crushed. This paste is applied topically on joints to cure rheumatism.
   **Note:** Strong nodes or articulation of internodes is denoted in the use.

8. **Blepharis repens** (Vahl) Roth (Acanthaceae) Hadsan, Had-sandhi:
   **Use:** Stem pieces are dried and finely powdered. About 5 gm powder is mixed in honey. It is taken orally twice daily till cure of bone fracture.
Note: The herb shows prominently noded stem-axes, which found place in its medicinal utility.

9. *Butea monosperma* (Lamk.) Taub. (Fabaceae) Dhak, Palas:
Use: Fresh flowers are rubbed on human body to minimize the effects of sunstroke.
Note: Red flowers and redness of sun is emphasized.

10. *Cardiospermum halicacabum* L. (Sapindaceae) Kapalphuti:
Use: The fruits are crushed in water. Extract obtained, about two spoonful, is taken orally for 2-3 days daily once to treat flatulence.
Note: The fruits are enclosed by the inflated calyces and hence considered useful against flatulence.

11. *Cassia auriculata* L. (Caesalpiniaceae) Awali:
Use: Paste of flowers and parched grams in equal ratio by weight is consumed to treat jaundice. It is practiced for 5-8 days.
Note: The plant bears yellow flowers. Their colour is compared for medicinal utility.

12. *Centella asiatica* L. (Apiaceae) Brahmi:
Use: Decoction prepared from leaves, about a half cup, is administered orally to reduce fever caused due to sunstroke.
Note: The plants inhabit watery cool places.

13. *Cissus quadrangularis* L. (Vitaceae) Kand-wel:
Use: Infusion of stem is applied topically in case of bone fracture.
Note: The lianashas stem-axes conspicuously joined which is emphasized in its use.

14. *Cuscuta chinensis* Lamk. (Cuscutaceae) Awarwel:
Use: The stems are crushed in water. Extract obtained, about a cup, is consumed for few days to cure jaundice.
Note: The plant is leafless and has yellow stem-axes. The yellowness is noted while selecting it as medicine.

15. *Eclipta alba* (Linn.) Hassk. (Asteraceae) Kalamaka:
Use: Leaf juice is applied topically on foot to cure injuries caused due to constant touch of muddy water in rainy season.
Note: The injuries are caused by muddy water. The plant species also inhabits aquatic places, and hence selected as a coolant.

16. *Euphorbia fusiformis* Buch.-Ham. ex D.Don (Euphorbiaceae) Bhuisherda:
Use: The underground tuberous/swollen stem-axis is peeled. These peels are tied at night on swelling of stomach.
Note: The underground stem-axis is a swollen structure, therefore it is considered useful to cure swelling of stomach.

17. *Ficus benghalensis* L. (Moraceae) Wad, Wat:
Use: Paste prepared from newly formed aerial roots is applied on head at night for a fortnight to promote hair growth.
Note: The tree produces every year very long, narrow aerial roots. These resemble long hair and hence thought remedial for hair growth.

18. *Homonoia riparia* Lour. (Apocynaceae) Umzadi, Dudhali:
Use: A spoonful of root powder mixed in lemon juice is drunk daily once to purify blood for a few days.
Note: Roots are reddish and hence conceived useful for purification of blood.

19. *Martynia annua* L. (Martyniaceae) Winchudo:
Use: Paste prepared from green fresh fruits is applied topically in case of scorpion sting to reduce pains.
Note: The fruits bear spines on its apical side resembling a sting of scorpion.

20. *Merremia emarginata* (Burm f.) Hall. f. (Convolvulaceae) Undirkani:
Use: The leaves are boiled in water to obtain decoction. About 10-15 ml of it 3-4 times a day is advised for a sufferer of rat bite.
Note: The plants bear leaves which are shaped like an ear-pinna of rat.

21. *Pterocarpus marsupium* Roxb. (Fabaceae) Lal-bivala:
Use: Red powder obtained from stem bark, about 10 gm, is consumed daily 2-3 times to check bleeding stools.
Note: Bark is reddish inside. It is, therefore, emphasized against blood (which is red) complaint.
23. **Salmalia malabarica** (DC.) Schott. and Endl. (Bombacaceae) Kate-sawar, Hawar:
**Use:** Plant is studded with tubercles. The tubercles are removed and rubbed in water. This plant is applied topically on pimples for few days daily once.
**Note:** The tubercles are thought simulating pimples on human face.

24. **Soymida febrifuga** (Roxb.) A.Juss. (Meliaceae) Rohan, Ragat-roida:
**Use:** Bark is extracted in water. About two spoonful of it is drunk at night once for 4-5 days to purify blood.
**Note:** Bark is red in colour which noted in its utility against (red) blood complaint.

25. **Terminalia arjuna** (Roxb. ex DC.) Wight & Arn. (Combretaceae) Arjun Sadada:
**Use:** Fresh stem bark is chewed by a person with ‘white spots’ on skin.
**Note:** Bark of stem is grey-white outside and hence thought better for white spots on skin.

26. **Wrightia tinctoria** R. Br. (Apocynaceae) Dudhkudi:
**Use:** Latex obtained at morning is diluted in water. A cup of this water is administered for a fortnight daily once to a mother to promote lactation.
**Note:** White colour of latex is compared with white milk.

**4. Results and Discussion**

4.1 Results of Investigation
The present paper included 26 angiospermic species belonging to 26 genera and 22 families. The plant parts such as inflorescences, flowers, fruits, seeds, stems, bark, leaves, tubers, roots and plant products like latex, etc. are used to prepare paste, decoction, extract, juice, infusion, powder, etc. Parts are employed fresh or stored ones. In few cases, entire plants are also used to prepare medicinal recipes.

4.2 Further Scope
This information is traditional in these tribal communities and passed orally over generations. If this data is evaluated critically in laboratories on scientific ground for their chemistry, biological activity and further clinical trials, hopefully they may yield new lead molecules or at least alternative sources of drugs. The results then obtained will be useful for the welfare of human societies.

4.3 History of Doctrine of Signatures
Developments in medicine and plant science, in earliest past, have gone hand in hand. Later, these divorced from each other and independent way of thinking became discernible world over. Origin of medicine is natural and initially developed from a desire to heal from within. The said desire or effort to heal is now called medicine. Such efforts are adapted or adopted from time to time and became part of the traditional system of knowledge. However, the history of traditions has been overlooked. For example, ‘Doctrine of signature’ was developed by Paracelus (1493-1541). It suggested that God marked objects with a sign (signature) for their purpose. These signs or appearances earmarked the ailment to be treated. The outward qualities of things or plants indicate inward virtues. Many evidence have been explained in lending support to the said doctrine e.g. lungwort, toothwort, liverwort, toothwort, snakeroot indicating the organ or their disease to be cured from these plant species (Arber, 1999).

4.4 Further Research Lending Support to the Doctrine
Nevertheless, the said doctrine was ignored for many centuries (Patil, 2004). Recently, Patil (loc.cit.) published an article and emphasized importance of this doctrine. He also tried to study and extend further, by publishing few more research writings, the said subject matter (Patil, 2005; 2007; 2009; 2012). The present paper communicates some more experience gained while working in predominantly tribal Dhule and Nandurbar districts of Maharashtra, India.

The observations made in these districts also entell the healing virtues of plants. These might be indicated by external signs to find out their medicinal utility. This can be evidenced from the cases noted in these districts. The white colour of latex is supposed to indicate curative property for complaints of lactation in ladies. The red colour of flowers, roots and stem-bark are suggestive of their utility against blood diseases. The grey-white colour of stem-bark is thought indicative of curing virtues for white spots on skin. Yellow colour of stem-axes is considered beneficial while treating jaundice, in which the human body is hued yellow. Plant species or their parts bearing sharp structures e.g. spines are conceived helpful in reducing pains caused due to scorpion sting. Similarity of variegations on seed-coats and skin of a snake is considered of medicinal significance while treating snake
bites. Elevated spots of pimples are compared with the tubercles developed on bark of trees, and hence thought useful against pimples. Ecological conditions of certain plant species are also suggestive for healing purpose. For example, plants growing in aquatic habitat have cooling effect on human body. Similarly, plants inhabiting rocky beds are believed beneficial while treating urinary stones. Similarly, there are also the cases of shape of plant parts e.g. (i) Swollen stem-axis is used against swelling of stomach. (ii) Inflated calycies containing fruits benefit the sufferers of flatulence. (iii) Spiny curved inflorescence is curative for scorpion sting. (iv) Shape of leaf resembling an ear-pinna of rat is considered remedial against rat-bite. (v) Strong jointed stems (culms) are utilized for bone-fracture. (vi) The elongated roots are medicinal to promote hair-growth. In a nutshell, the external signs as understood from plants or their organs warrant medicinal virtues they possess. This doctrine thus aids in bioprospecting, especially medicinal plants.

4.5 Common Names Indicative of Medicinal Utility
Certain English common names suggests their utility against treating diseases of particular organs e.g. lungwort to cure pulmonary complaints, toothwort to benefit in toothache, liverwort in relieving troubles of liver, snakeroot against venomous bites of snakes, etc. Similar cases of local plant names are also observed in the present area under study. For example, dudhkudi (dudh-milk) useful to promote lactation; Winchudo (winchu-scorpion) beneficial in treating scorpion-sting; Hadsandhi or Hadson (Had-bone, Sandh/Sandhane-to join) aids in bone fracture; Ragatroida (ragat-blood) remedy against blood diseases; Undirkani (Undir-rat) useful to treat rat-bite. Interestingly, all these cases can easily correlate with the doctrine of signatures also.

4.6 Comparison with Ayurvedic Medicines
On comparison of these traditional medicines with Ayurvedic medicinal plants, the author noted similar applications in case of (i) Hemidesmus indicus, (ii) Ammannia baccifera and (iii) Merremia emarginata. Two different species of the genera from Ayurvedic medicinal plants viz., Cuscuta reflexa and Baliospermum solanifolium (J. Burm.) Suresh have similar applications as those species of the present study. Interestingly, Ayurvedic medicinal plants and traditional medicinal plants from Dhule and Nandurbar districts exhibit similar signatures (Patil, 2005; Present study).

Research Highlights
Many researchers do not seek origin of the drugs current in the tribal society. My attempt has been successful in this regard.

Limitation
Laboratory analysis should be done.

Recommendations
Such researches should be analysed on chemical and clinical trials on modern scientific grounds.

Funding and Policy Aspects
It is not funded by anybody. Being as a teacher in this field, it was carried out by me.

Justification of Research
My research is in-depth as it unearthed the reasons for using their traditional drugs.

Conclusion
This investigation revealed not only traditional medicines used by indigenous tribal people but also lend support to the doctrine of signatures. It also earmarked similarity of utilities and signatures in Ayurvedic system of Indian medicine. Interestingly, common names of plant species in this region are also suggestive of their medicinal utilities.

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References


