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ETHNOMEDICINAL IMPORTANCE OF INVASIVE ALIEN FLORA OF LATEHAR AND HAZARIBAGH DISTRICTS: JHARKHAND

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ABSTRACT

During the process of investigation and documentation on invasive alien flora available in Latehar and Hazaribagh districts, some of the interesting facts on potential medicinal uses were closely noted based on experimented and proven evidences by interrogation with the ethnic people especially tribes like Munda and Birhore. In this paper the most commonly used invasive alien medicinal species viz. *Ageratum conyzoides*, *Argemone mexicana*, *Calotropis procera*, *Cassia alata*, *Cassia tora*, *Cuscuta reflexa*, *Datura metel*, *Eclipta prostrata*, *Emilia sonchifolia*, *Eupatorium odoratum*, *Hyptis suaveolens*, *Leonotis nepetaefolia*, *Opuntia stricta*, *Scoparia dulcis*, *Sida acuta*, *Solanum torvum*, and *Tridax procumbens* possessing different medicinal properties like expectorant, styptic and antibiotic, antifungal, antispasmodic, anodyne, febrifuge, refrigerant and enteritis are discussed.

Key words: Alien, Ethnomedicine, Hazaribagh, Latehar.

Introduction

Aliens - as it literally means non native - species are those plant and animal species that have been accidentally or intentionally introduced into a new ecosystem. Humans are main vector for both intentional and accidental introduction of alien plant and animal species (Hurka *et al.*, 2003; Turlings, 2000) to fulfill their economic, environmental and social considerations. Alien species becomes invasive when they successfully reproduce and proliferate themselves in the introduced ecosystem to such an extent to over pass the native biota in terms of habitat occupation and exploitation of water and nutritional resources (Reddy, 2008). The invasion of alien species has been evaluated as second most important threat to native species existence behind habitat destruction (Jenkins, 1999). Despite the detrimental effect of Invasive alien species, some of them have got human admiration because of their beneficial utility. Ethnomedicinal formulation from alien invasive plants for healing diseases is one of them and is discussed in this paper.

Material and Methods

Study area

The present study was undertaken in Latehar and Hazaribagh district of Jharkhand, India during November 2010 to February 2011. The district Latehar is located at latitude 23°56' N – 23°35' N, longitude 84°50' E – 84°06' E

and altitude 327 m having an annual rainfall of 1200 mm. Hazaribagh is located at latitude 23°50' N – 24°4' N, longitude 85°21' E - 85°9' E and altitude 604 m having an annual rainfall of 1234.5 mm.

Data collection and analysis

Open ended interview from the members of Munda and Birhore tribes of the study site were conducted to record the ethnomedicinal property of Invasive alien plant species. Utmost care was taken to ensure the participation of wide range of social personalities like farmers, village community leaders and local herbal healer belonging to Munda and Birhore tribal community. Photographs and herbarium specimens of alien invasive species were used at the time of interview to prevent the adulteration of any vernacular name ascertained to more than one plant. Direct observations were tried at the practice site of local herbal healers prescribing these drugs to patients. The plants were identified with the help of local flora literature (Haines, 1978; Paria and Chattopadhyay, 2000). Herbarium specimens were prepared and submitted to the herbaria of Institute of Forest Productivity, Ranchi.

Results and Discussion

A total of 41 Invasive alien plant species were recorded from different habitat including forest, non forest areas and water bodies of Latehar district. Out of the 41 Invasive alien plant species documented, 17

Invasive alien flora were used by the ethnic people especially tribes like Munda and Birhore of Jharkhand for different medicinal properties like expectorant, styptic and antibiotic, antifungal, antispasmodic, anodyne, febrifuge, refrigerant and enteritis.

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Table 1 : List of Alien invasive flora with medicinal attributes from Latehar and Hazaribagh districts of Jharkhand

Sl. No.	Species	Common name	Vernacular name	Family	Medicinal property	Nativity
1	<i>Ageratum conyzoides</i>	Goat weed	Peela kataiya	Asteraceae	Styptic and Antibacterial	Tropical America
2	<i>Argemone mexicana</i>	Mexican poppy	Gandhali ghas	Papavaraceae	To cure Paralysis	Tropical America
3	<i>Calotropis procera</i>	Apple of sodom	Akwan	Asclepiadaceae	Anodyne and hydragogue	Tropical Africa
4	<i>Cassia alata</i>	Ringworm senna	Bada chakor	Caesalpiniaceae	Febrifuge and antifungal	West Indies
5	<i>Cassia tora</i>	Sickle wild sensitive plant	Chakor	Caesalpiniaceae	Blood enhancer	Tropical south America
6	<i>Cuscuta reflexa</i>	Dodder	Amarbel	Cuscustaceae	Skin medication	Medi- -terranean
7	<i>Datura metel</i>	Angel's trumpet	Dhatura	Solanaceae	Antispasmodic	Tropical America
8	<i>Eupatorium odoratum</i>	Siam weed	Banmara	Asteraceae	Anodyne	Tropical America
9	<i>Eclipta prostrata</i>	False daisy	Bhringraj	Asteraceae	To cure tongue boils	Tropical America
10	<i>Emilia sonchifolia</i>	Tassel flower	Puru	Asteraceae	Styptic and Antibacterial	Tropical America
11	<i>Hyptis suaveolens</i>	Wild spilenard	Ban tulsi	Lamiaceae	Expectorant	Tropical America
12	<i>Leonotis nepataefolia</i>	Lions ear	Hejurchi	Lamiaceae	To cure skin boils	Tropical Africa
13	<i>Opuntia stricta</i>	Prickly pear	Nagpheni	Cactaceae	Anti inflammatory	Tropical America
14	<i>Scoparia dulcis</i>	Sweet broom	Madhukam	Scrophulariaceae	Refrigerant and Enteritis	Tropical America
15	<i>Sida acuta</i>	Snake tongue	Bariyar	Malvaceae	Antiviral	Tropical America
16	<i>Solanum torvum</i>	Turkey berry	Kutumba	Solanaceae	Appetite enhancer, Stomachic	West Indies
17	<i>Tridax procumbens</i>	Tridax daisy	Bhengariya	Asteraceae	Antibacterial	Tropical America

species (Table 1) has been found to have medicinal property and is used in ethnomedicinal formulations to cure various ailments. It was observed that local people rely on traditional herbal practitioner to cure their disease. Though local people know about the medicinal property of plants, the herbal practitioners are well expert in preparing herbal drugs in the form of tablet, paste and liquid preparation by applying different plant part combination in definite proportions in terms of weight and prescribing their definite doses to patients according to their age, gender and disease status. The use of Invasive alien plant in folklore medicine shows the inherent human curiosity over plants. Since these plants are alien and are introduced from foreign countries, the introduction of these species might have evoked curiosity among local people and herbal healers which would have led them to experiment with these plants and to come on a final conclusion of their healing properties. There is no exaggeration to term these conclusions as inventions. The herbal formulations discussed in this paper involve a combination of plants of native species with alien species, the documentation of such ethnomedicinal knowledge serve as a guiding clue to investigate, isolate and characterize the active principle present in them. The significance of these formulations also relies on the fact that they enrich the vast traditional knowledge database of our country and their future pharmacological validation would surely help to protect our Intellectual property rights.

Ethnomedicinal formulations documented from the Munda tribe

- i) *Ageratum conyzoides* and *Emilia sonchifolia* : Leaf juice of either plant along with *Jatropha curcas* sap is applied on injury cuts to stop bleeding and heal the wound.
- ii) *Argemone mexicana* : Root together with the root of *Andrographis paniculata* and *Carissa carandas* is cooked in mustard oil and the oil is used as massage on paralysis affected organ.
- iii) *Calotropis procera* : The root of *Calotropis procera* and *Datura metel* is made into paste and applied on swollen and painful testicles. The paste is tied on affected organ for half an hour for 3-4 days. Normally it takes 3 days to have a complete cure.
- iv) *Cassia alata* : 15-20 seed are grind with palm sugar and dissolved in 100 ml water and is given twice a day for 3 days to cure fever. The leaf paste is applied on ringworm affected skin.
- v) *Cassia tora* : The plant is taken as a nutritive pot herb and is recommended to the person suffering from loss of haemoglobin (Anaemia).
- vi) *Datura metel* : The dried leaves are smoked to cure whooping cough.
- vii) *Eclipta prostrata* : The root of *Eclipta prostrata* and *Gardenia latifolia* is made into coarse paste and mixed with pork's fat and is kept in glass vial to give sunlight treatment. This pickle like preparation is

- given to the patient suffering from boils on tongue.
- viii) *Hyptis suaveolens* : The leaf together with *Piper longum* seeds and *Gingiber officinale* rhizome is boiled together and the water extract is given to the patient suffering from cold and cough.
- ix) *Leonotis nepataefolia* : The seed of *Leonotis nepataefolia* and *Annona squamosa* along with the leaf of *Calotropis procera* is cooked in mustard oil. The oil is used as massage to cure boils on skin.
- x) *Scoparia dulcis* : The juice of whole plant along with *Allium cepa* is extracted and is given half a cup 3-4 times to the patients suffering from heating of bowels.
- xi) *Scoparia dulcis* and *Datura metel* : Among tribal people of Jharkhand, an intoxicant traditional beverage is very common called 'Handia' which is prepared by fermenting the rice starch. During the process of fermentation, a fermenting agent called 'Ranu' plays the key role. Ranu is prepared from herbal extracts. The root of *Scoparia dulcis* together with the root of *Datura metel*, *Asparagus racemosus*, *Cissampelos pareira*, *Phyllanthus niruri* and *Woodfordia fruticosa* are taken in equal proportion and grind into powder. 250 gm of this powder is knead with 750 gm of rice powder and coin size tablets called 'Ranu' are made which are kept dried between two layers of straw to get infected with yeast cells. Ranu is used to ferment the rice starch. The local herbal healer prescribe Handia in some specific diseases like jaundice and dog bite during which the main herbal drugs are supplemented with a little volume of Handia. The notion behind is Handia enhances the efficacy and helps get absorbed the drug in the body properly.
- xii) *Sida acuta* : The root of *Sida acuta* and whole plant of *Phyllanthus niruri* are grind together and given with 100 ml of water for 3 days to cure Jaundice.
- xiii) *Solanum torvum* : The roasted fruit is given to the patient suffering from loss of appetite.
- xiv) *Tridax procumbens* : The whole plant is grind and applied as poultice to chronic wounds. The plant is dried and made into powder to apply on the wounds.
- Ethnomedicinal formulations documented from the Birhore tribe
- i) *Argemone mexicana* : Root is made into paste and applied on Hydrocoel inflammation twice a day for 3-4 days to have a complete cure.
- ii) *Calotropis procera* : On painful swellings at any part of the body, the affected organ is massaged with Pork's fat oil followed by the fomentation of heated warm leaves of *Calotropis procera* over the organ.
- iii) *Cuscuta reflexa* : Stem is boiled in water and the water is used to bathe the infant having birth marks on the skin. Bath is given till the marks are removed. *Cuscuta reflexa* stem paste is also applied to cure skin itching.
- iv) *Eupatorium odoratum* : 4 - 5 leaves are made into paste with a half cut onion. The paste is applied on the forehead of the person suffering from migraine.
- v) *Opuntia stricta* : In the swelling of lower portion of legs due to fatigue or excess of cold, the stem of *Opuntia stricta* is made into paste and applied on affected portion to have a relief from pain.
- vi) *Sida acuta* : A decoction of the root of *Sida acuta* together with palm sugar is prescribed to increase the bile secretion and induce active movement of Bowels.
- vii) *Solanum torvum* : The fruits are cut into two halves and roasted in mustard oil. The roasted fruits are given to the woman who has just faced parturition. The roasted fruits have a restoring effect on the female reproductive system.

The information obtained from this ethnomedicinal study is to ensure the therapeutic efficiency of the traditional medicinal plants, which may be used as leads in developing novel therapeutic agents. Since the users are based on empirical knowledge, scientific studies of all these herbal drugs are highly desirable to establish their efficiency for safe use. A recent review of literature revealed that the above medicinal plants have been only sparingly investigated for their constituents and hence the collected information may be useful for researchers in the field of ethnobotany, taxonomy and pharmacology.

Acknowledgement

Authors are thankful to UNDP, India for providing fund for the project "Phytosociological analysis of flora in selected forests and documentation of Invasive alien species on non forest areas of Latehar and Hazaribagh district". Authors are also thankful to the Director, Institute of Forest Productivity, Lalgutwa, Ranchi, Jharkhand for providing basic infrastructure and support in this regard.

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