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Herbal Medicines Used in the Management of Scorpion Sting in Traditional Practices - A Review

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ABSTRACT

The mortality associated with scorpion sting rates from 3-22% worldwide. Out of 1500 scorpion species, 50 are dangerous to humans & can cause wide range of conditions including local as well as systemic symptoms. The plant and plant products have augmented human culture since time immemorial. The tribal peoples are custodian of unique traditional knowledge systems and their ambient flora and fauna. Traditional medicine practices and ethnobotanical information play an important role in the scientific research. 80% of world's population depends on traditional Medicine and in India about 65% people from rural area uses Ayurveda and herbal medicines for the treatment various ailments including venomous bites. The present paper deals with the documentation & review of various ethnomedicinal plants used effectively by the tribal particularly for the management of Scorpion sting cases.

Keywords: Traditional medicine, Scorpion sting, Ethnomedicinal herbs

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INTRODUCTION

Scorpion sting is a major health problem in underdeveloped countries like India. For every person killed by a poisonous snake, 10 are killed by poisonous scorpion¹. Out of 1500 scorpion species, 50 are dangerous to humans & can cause wide range of conditions from severe local reactions to neurologic, respiratory and cardiovascular collapse². Reliable statistics are not readily available for this common rural accident. Several enveno-mations are unreported and sometimes true incidence is not known. Case fatality rates of 3-22% were reported among children hospitalized for scorpion stings in India, Saudi Arabia and South Africa^{3,4}. Among the 86 species of scorpions encountered India, *Mesobuthus tumulus* and *Palamneus swammer-dami* are of medical importance⁵

The use of medicinal plants to cure specific ailment has been in vogue from ancient times. This medico-lore is passed over generations traditionally all over the world. Traditional medicine” is a comprehensive term used to refer both to TM systems such as traditional Chinese medicine, Indian *Ayurveda* and Arabic *Unani* medicine, and to various forms of indigenous medicine⁶. Herbal medicines include herbs, herbal materials, herbal preparations and finished herbal products that contain as active ingredients parts of plants, or other plant materials, or combinations thereof.

Nature has bestowed several plants which contain natural substances and promote health and alleviate illness. In the culture history of humankind the causative factors of afflictions which beset the body and the mind or attributed to naturalistic and super naturalistic phenomena. Ethnomedicine is used to refer to nature practices of healing and treatment of ailments and diseases using a variety of local practices made of wild plant and animal products. The tribal peoples are custodian of unique traditional knowledge systems and their ambient flora and fauna. Ethobotanical studies related to tribal medicine or enthnomedicine have identified some 45,000 plant species which are available to 550 Indian tribal communities belonging to 160 linguistic groups inhabiting in varied geographical and climatically zones⁷.

The information about the prescriptions, pharmacology, attitude towards disease diagnoses etc., of the age-old tribal medicine are lying unknown as they are not rendered in writing. In the past decades there is improved attention & interest in the traditional use of medicine globally⁸. According to WHO, as many as 80% of world’s population depends on traditional Medicine and in India about 65% people from rural area uses *Ayurveda* and herbal medicines for the treatment of various ailments including venomous bites and stings⁹. Hence the aim of present paper was to

review the traditional indigenous knowledge about medicinal plants used particularly for the management of Scorpion stings cases. This systematic review was conducted with an objective to search and explore the traditional medicinal plants & or plant products used in the management of Scorpion sting in various forms all over the world.

MATERIALS AND METHODS:

All relevant articles from the research journals of *Ayurveda*, ethnomedicine, traditional herbal medicine & other fields like botany stating the medicinal properties of various plants alleviating scorpion venom were reviewed. A short local survey of tribal was conducted in and around Anand district to inquire the traditional medicines used in scorpion sting cases. Books written on Traditional & Ethnomedicine were also reviewed as well as Electronic Database search on PubMed and Google was conducted for the review.

Following medicinal plants species belonging to diverse plant resource mostly administered in folklore practices are being found to counteract Scorpion venom and symptoms produced because of it.

***Abrus precatorius* Linn.**

Family: Fabaceae

Root powder is taken orally along with cow's milk to treat scorpion sting and snakebite.¹⁰

***Achyranthes aspera* L.**

Family: Amaranthaceae

Leaves and roots are used against scorpion bite^{11,12,13,14,15}.

Roots are crushed with 2 seeds of *Caesalpinia cristata* and externally applied on sting part. A decoction made by 20gm root of this plant with 5 *Piper nigrum* is also effective^{16,17}.

***Adiantum venustum* D. Don,**

Family: Adiantaceae

Decoction of fronds is given in fever also used in scorpion sting¹⁸.

***Ailanthus excelsa* Roxb.**

Family: Simaroubaceae

A decoction of the leaves with the leaves of *Aristolochia indica* mixed with goats' milk to drink to cure scorpion sting and snake bite¹⁹.

***Allium sativum* L.**

Family: Liliaceae

Paste of bulblets and salts is applied on wounds of scorpion sting to reduce effect of poison.²⁰ Oil is applied on scorpion sting²¹.

***Amaranthus spinosus* L.**

Family: Amaranthaceae

Roots are administered in treating scorpion stings^{22, 23} Traditionally leaves are used to treat scorpion stings²⁴

***Amaranthus viridus* Linn**

Family: Amaranthaceae

Emollient is used as an antidote for Scorpion stings^{25,26, 27}

Andrographis paniculata

Family: Acanthaceae

Leaf is grinding and made into paste and applied externally in scorpion sting and snake bite^{19, 28}.

Andrographis serpyllifolia

Family: Acanthaceae

Paste of leaves is applied on affected part in snake bite and scorpion bite²⁹.

***Anisomeles indica* O. Kze**

Family: Lamiaceae

The leaf paste is applied on snake bites and scorpion sting³⁰.

Anisomeles malabarica

Family: Lamiaceae

The leaf of juice mixed with water to drink which cure scorpion sting and snake bite³⁰.

Anogeissus latifolia

Family: Combretaceae

Stem bark paste is applied externally in Ramana penta in scorpion bite³¹.

***Argemone mexicana* Linn.**

Family: Papaveraceae

Latex is used to cure scorpion bite^{29, 30}.

***Aristolochia bracteolata* Lam.**

Family: Aristolochiaceae

Paste of leaves is applied externally in snake bite and scorpion bite²⁹.

Aristolochia indica

Family: Aristolochiaceae

The leaf juice is taken orally to treat skin disease and scorpion sting.¹⁹

Root powder is taken with hot water orally twice a day in scorpion sting.^{29, 30}

Leaf poultice is used locally in scorpion sting³².

Artemisia scoparia Waldst

Family: Asteraceae

Whole plant used as a purgative and in the treatment of burns, and scorpion bite³³.

Infusion of the plant is used in cases of scorpion and snake bite²⁵.

Biophytum petersianum

Family: Oxalidaceae

In Cameroon and Mozambique the plant is used as an antidote against scorpion sting and snake bite^{34,35}.

Biophytum sensitivum (Linn.)

Family: Oxalidaceae

Plant extract is given orally as an antidote to snakebite and scorpion sting bite³⁶

Calotropis gigantean

Family: Asclepiadaceae

The paste of the root is applied for reducing swelling caused by scorpion sting³⁷

Calotropis procera (Ait.)

Family: Asclepiadaceae

Latex is applied locally on wounds caused by scorpion sting.^{20, 26, 32}

Carica papaya L.

Family: Caricaceae

Latex is applied at the site of scorpion sting³⁸

Cassia auriculata

Family: Fabaceae

Juice of fresh macerated leaves is dropped into ears in Diguvametta in scorpion bite³¹

Cassia fistula L.

Family: Fabaceae

Stem bark paste is applied on Scorpion bites⁴⁰.

Centropogon cornutus

Family: Campanulaceae

Leaves are used in cases of scorpion sting⁴⁰.

Chloroxylon swietenia DC.

Family: Rutaceae

Fresh stem bark paste ground in urine is applied on affected part in scorpion bite in Isakagundam.³¹

Cleome viscosa

Family: Cleomaceae

Leaves paste applied externally in scorpion sting and snake bite¹⁹.

Clerodendrum viscosum Vent

Family: Verbenaceae

Leaf is used to treat infections from scorpion bite.⁴¹

Coelosia argentea

Family: Amaranthaceae

Fresh leaf paste is applied externally on scorpion bitten area³¹

Cyperus rotundus L.

Family: Cyperaceae

Paste of dried tuber is applied topically on bitten site of scorpion¹⁰.

Dioscoria oppositifolia L.

Family: Dioscoreaceae

Powdered root mixed with cow urine is applied on scorpion bitten area.³¹

Ecilipta prostrate L

Family: Asteraceae

Leaf decoction is applied on the affected area to relieve pain of scorpion sting⁴²

Emblica officinalis Gaerth

Family: Phyllanthaceae

The leaf juice mixed with black pepper and drink to treat scorpion sting³⁰.

Ervatamia coronaria

Family: Apocynaceae

Root & bark used as antidote for scorpion sting.⁴³

Erythrina stricta Roxb

Family: Leguminosae

Flowers are used in Scorpion Sting⁴⁴

Euphorbia ligularia Roxb.

Family: Euphorbiaceae

Latex of the plant is employed as antidote for scorpion sting^{12, 45}

Euphorbia nivulia Buch

Family: Euphorbiaceae

Latex of the plant is employed as antidote for scorpion sting^{12, 45}

Ficus benghalensis L.

Family: Moraceae

Paste of tender leaves is applied locally over the wound caused by scorpion sting.²⁰

Gmelina arborea Roxb.

Family: Lamiaceae

Fresh leaf paste is applied externally scorpion bitten area in Isakagundam³¹.

Heliotropium eichwaldi Steud.

Family: Boraginaceae

The leaf paste is applied locally to combat scorpion bite⁴⁶.

Helitropium indicum L.

Family: Boraginaceae

Leaves are employed as antidote for scorpion sting^{12, 47}

The leaf juice mixed with hot water is used in snake bite and scorpion sting³⁰.

Hura crepitans L.

Family: Euphorbiaceae

Sap is applied topically in cases of scorpion sting⁴⁸.

Madhuca indica Gmel

Family: Sapotaceae

Seeds oil – snake bite, scorpion bite.^{49,50}

Madhuca latifolia Roxb

Family: Sapotaceae

Dried fruits with leaves of *Ipomea stramonium* (*Beshram*) made into paste and applied on sting part.¹⁶

Mangifera indica L.

Family: Anacardiaceae

Powder of flowers is applied over the wound caused by scorpion sting²⁰

Martynia annua Linn.

Family: Pedaliaceae

The fruits are used for scorpion stings^{12,51}

Seeds about 5 gm, soaked in the water and made paste, applied 2-3 times externally on affected area¹⁶

Mesua ferrea* Linn.*Family:** CalophyllaceaeFlowers and leaves are also used against snakebite & scorpion sting⁴³.***Mikania micrantha* Linn.****Family:** AsteraceaeJuice is useful in insect bite and scorpion sting²⁶.***Muraya paniculata* (Linn)****Family:** RutaceaeThe leaf powder mixed with hot water to drink which cure snake bite, insect bite, scorpion sting, skin diseases, also used as an antidote to poison²⁹.***Nerium indicum* Mill****Family:** ApocynaceaePaste of root is applied on wound caused by snake bite and scorpion sting²⁰.***Nopalea cochinellifera*****Family:** CactaceaeUsed in the management of Scorpion sting⁴⁰***Nymphoides hydrophylla* Lour****Family:** MenyanthaceaeLeaf paste is used as an antidote for scorpion sting⁴²***Operculina turpethum*****Family:** ConvolvulaceaeThe root purgative and prescribed in scorpion sting⁵²***Oroxylum indicum* Linn.****Family:** BignoniaceaeStem is antidote for scorpion sting⁴³.***Pinus roxburghii* Roxb/****Family:** PinaceaeWood and Resin wood used in scorpion sting^{53,54}.***Quercus leucotrichophora*****Family:** FagaceaeBark is used for the treatment of Scorpion sting⁵⁵.***Rhinacanthus nasutus* Kurz****Family:** Acanthaceae

Leaf paste of the plant is used in treatment of snake bite and scorpion sting²⁹.

Rosmarinus officinali

Family: Lamiaceae

As an antidote of Scorpion sting⁴⁰

Saraca asoca Roxb.

Family: Caesalpinaceae

Bark is astringent, used in uterine inflation, in gonorrhoea & scorpion sting⁴³.

Strychnos nux-vomica

Family: Loganiaceae

The juice obtained from root along with lime extract, leaves of thumbai (*Leucas aspera* (willd.) Link) and sivanar vembu (*Indigofera aspalathoides* Vahl.) is taken orally to treat scorpion bite⁵⁶.

Strychnos potatorum L.

Family: Loganiaceae

Seeds paste is applied externally and is also given orally during scorpion bite³¹.

Tamarindus indica

Family: Caesalpinioideae

In Trinidad and Tobago plant is used in the treatment of Scorpion stings⁴⁰.

Make a small incision on the site of scorpion sting and place the cotyledon over it. If poison are absorbed the patient get relief¹⁶.

***Tiicora acuminata* (Lam)**

Family: Menispermaceae

Root is used to treat scorpion sting⁵⁷.

Tragea plukenetii R

Family: Euphorbiaceae

Root is used to treat scorpion sting⁵⁷.

Urginea indica Kunth.

Family: Liliaceae

Tuber is used in the treatment of Scorpion bite^{49, 58}.

DISCUSSION:

The present paper includes information on 64 plants used traditionally for Scorpion sting. Most of these are administered in forms like infusion, juice, extract, powder, paste, poultice, latex and oil. References of these drugs may also be seen in the context of Scorpion Sting (Vrishchika

Damsha) in scattered form in the classics of Ayurveda. These herbs are easily available, common and cheaper. The method of preparation and mode of action is also simple and convenient. The plants used by the layman against scorpion stings have been found to possess remarkable properties. These can be inferred from the critical examination and observations of ethnomedicinal plants growing in surroundings. The conventional medicines used by the present civilized world have been developed through indigenous knowledge of the primitive societies. Their trial and errors give birth to medicines. These drugs are generally indicated individually, but sometimes can be utilized in combination with other herbs possessing anti-Scorpion venom property for better outcome. Blending these herbs with anti-scorpion venom may also be a good perspective and question for the research in future.

CONCLUSION:

Several herbal medicines are being used traditionally in the management of scorpion sting. Though the data indicates great importance of indigenous knowledge in therapeutic uses particularly in cases of scorpion sting, but still a great precaution should be taken as scorpion stings may be a devastating condition and needs emergency management as fatality in scorpion stings depends on various factors. Further studies of these herbs for their chemical contents and toxicity, if any, may help to increase efficacy vis-à-vis authenticity of the claims.

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