

Study of Few Climbers and Twiners used to cure Inflammatory Diseases of District West Champaran

Rajeev Ranjan Baitha and ¹Md. Sarfaraz Ahmad

¹Department of Botany, Gopeshwer College, Hathwa, Gopalganj, Bihar.
(Jai Prakash University, Chapra, Bihar)

ABSTRACT

There are a number of climbers and twiners which grow in nature and are used to cure inflammatory diseases. The proposed study is based on the studies of few climber and twiner plant species grows in West Champaran. Information were gathered after questionnaires with the local people of different places like Bettiah, Nautan, Ramnagar, Balmikinagar etc. Belonging to District of West Champaran. During entire work 20 different types of climbers and twiners belonging to 13 families were noticed from the proposed research site used by the local people to treat different types of inflammatory diseases.

Keywords: Climbers and twiners, Inflammatory diseases, West Champaran.

*Corresponding author: mdsarfarazahmad786@gmail.com

INTRODUCTION

Plants show a rich source of antimicrobial agent (Mahesh *et al.*, 2008) and natural oxidants (Halliwell *et al.*, 1995). Many plant materials used in traditional medicines are readily available in rural areas at comparatively cheaper price than modern allopathic medicines (Mann *et al.*, 2008). Nearly about 80% of the world's populations still depend upon traditional remedies together with folklore system mainly based on phytotherapy (Azaizeh *et al.*, 2003).

India has a rich tradition of plant based knowledge on healthcare system and is the home town of largest medicinal herbs and more than 6000 medicinal plants have been used in primary healthcare system (Shariff *et al.*, 2006).

A large number of plants are used by folklore traditions in India for treatment of inflammation. Inflammation is a complex biological response of vascular tissues to harmful stimuli such as pathogens, damaged cells and irritants. It is defined as a tissue directed response to noxious and injurious external

and internal stimuli, which is predominantly mediated by 'arachidonic acid metabolites'. Actually, inflammation is of two types *i.e.*, acute or chronic. Acute inflammation forms the initial response of the body to harmful stimuli which is achieved by the increased movement of plasma and leukocytes from the blood into the injured tissue. Prolonged inflammation is called as chronic one which leads to a progressive shift in the type of cells present at the site of inflammation and is characterized by simultaneous destruction and healing of the tissue from inflammatory process. Acute inflammation is a short-term process, usually appearing within a few minutes or hours and ceasing upon the removal of the injuries stimuli. There are five cardinal signs characterize as: Pain (Dolor), Redness (Rubor), Heat (Calor), Swelling (Tumor) and Loss of function (Functiolaess). Causes of inflammations are Burns, Chemical intents, Toxins, Infection by pathogens, Physical injury, Immune reactions due to hypersensitivity, Ionizing radiations, Foreign bodies like dirt in debris etc.

Drugs currently used for management of pain and inflammatory conditions cause toxic side effects on chronic administration. Therefore attempts are being taken to study promising plants which may lead to develop newer and safer drugs for curing inflammation. The use of climber and twiner plants in traditional medicine to cure various ailments all over the world cannot be over emphasized according to the World Health organization (WHO). Inflammation is a very common problem among the people of West Champaran. To treat this disease in the proposed area people used a number of climbers and twiners plant species which have been studied under proposed work.

MATERIAL AND METHODS

Research site

The proposed area named district West Champaran is located at North-West region of Bihar near Nepal and lies in between 26.16° to 27.31° North latitude and 83.50° to 85.18° East longitude. This place is bounded on north by hilly region of Nepal, south by Gopalganj and part of East Champaran, east by a part of East Champaran and West by Padrauna and Deoria district of U.P. Total geographical area of this district is 4843.51 sq. km comprising 18 Blocks. As per 2011 census total rural population is 3541877 and total urban population is 393165 of this district. Average annual rainfall is 1510.4 mm. Ground water quality is good for drinking and irrigation. Major crops of this district are Paddy, Potato, Wheat, Barley and Arhar. Pre-monsoon water depth level is 1.48-5.16 m bgl while post-monsoon water depth level is 1.22-3.97 m bgl of this district. During entire work few places like Bettiah, Nautan, Ramnagar and Valmikinagar of district West Champaran are selected for proposed study.

The research area was season wise extensively surveyed during June 2017-May 2018. Plant specimens were collected from different localities of the area. Data of the folk medicinal uses of indigenous

West Champaran



plants were obtained through questionnaire and interviews with Baidhyas, Hakims, Ojhas, Kabirajs, Old aged peoples or Traditional hillers etc. who have knowledge on medicinal plants of climbers and twiners used in the treatment of inflammatory diseases. Those people particularly the old men and women were interviewed whose empirical knowledge were respected by everyone. The present study provides some additional uses of the species which are otherwise used in other areas. Collected plants were dried, pressed and mounted properly following Carter *et al.*, 2007.

The identification of the plants were done with the help of available literature and by comparing with the authentic specimens available in the herbarium center. Voucher specimens were prepared by following the methods of Jain and Rao (1977). Finally identification of voucher specimens were confirmed by consulting literature as Botany of Bihar and Orissa (H.H. Hains, 1921, 1925). After identification voucher specimens were deposited in the Plant Taxonomy lab of Gopeshwar College, Hathwa for future reference.

RESULT AND DISCUSSION

Enumeration of plant species:

During the entire course of study 20 plant species belonging to 13 families were identified to cure various ailments. These are discussed as :

01. *Momordica charantia*L.

Family Name: Cucurbitaceae.

Local name: Karela.

English name: Bitter gourd.

Nature of plant: An annual climber.

Part (s) used: Fruit.

Local uses: Fruit extract is used as blood purifier and used to cure inflammation of liver and spleen.

02. *Cucurbita maxima* Duch. ex Lam.

Family name: Cucurbitaceae

Local Name: Lal kaddu, Lal qumra, Kashiphal.

English name: Giant pumpkin.

Nature of plant: An annual climber.

Part (s) seed: Fruit and seed.

Local uses: Fresh fruit with seeds is massage on irritated and burning skin.

03. *Cucurbita pepo* L.

Family name: Cucurbitaceae,

Local Name: Safed kaddu, Kumrha.

English name: Pumpkin, Winter squash.

Nature of plant: An annual climber.

Part (s) used: Fruit and seed.

Local uses: Fresh fruit with seeds is massage on irritated and burning skin.

04. *Luffa cylindrica*(L.) Roem.

Family name: Cucurbitaceae.

Local name: Ghia Tori.

English name: Sponge gourd.

Nature of plant: A climbing herb.

Part (s) used: Fruit.

Local uses: The dried fruits are used as abrasive sponges in skin care to remove dead skin and stimulate the peripheral stimulation.

05. *Trichosanthes cucumerina*L. var. *anguina*(L.) Haine.

Family: Cucurbitaceae.

Local name: Chichira.

English name: Snake gourd.

Nature of plants: An annual climber.

Part (s) used: Fruit.

Local uses: Fruit extract is very useful to cure inflammation in liver and checks digestive disorders.

06. *Preacitrullus fistulosus* (Stocks) Pangalo.

Family: Cucurbitaceae

Local name: Teenda.

English name: Indian round gourd, Round melon, Apple gourd.

Nature of plant: An annual Climber.

Part (s) used: Fruit.

Local uses: Fruit extract is useful to cure inflammation in liver.

07. *Diplocyclos palmatus* (L.) C.Jeffrey

Family: Cucurbitaceae.

Local name: Shivalingi.

English name: Lollipop climber.

Nature of plant: Climber.

Part used: Whole plant

Local uses: Whole plant extract is applied externally to cure inflammation in head.

08. *Ipomoea eriocarpa*R.Br.

Family Name: Convolvulaceae.

Local name: Buta, Budhi bel.

English name: Morning glory.

Nature of plant: A twinner prostrate herb.

Part (s) used: Whole plant and root.

Local uses: The plant is powder and extract are used for eczema and skin disorders.

09. *Ipomoea pes-tigrids*L.

Family name: Convolvulaceae.

Local name: Panchpatia, Goj Bahrwa.

English name: Tiger foot morning glory.

Nature of plant: A twinner prostrate herb.

Part (s) used: Whole plant.

Local uses: The plant paste is used to cure eczema and skin disorders.

10. *Abrus precatorius* L.

Family name: Fabaceae.

Common name: Ratti, Ghugachi.

English name: Jequirity, Indian liquorice.

Nature of plant: An annual climbing shrub.

Part (s) used: Leaves.

Local uses: Leaves extract is used to cure inflammation, painful swelling, leucoderma, itching, eczema and many other skin diseases.

11. *Celastrus paniculatus* Willd.

Family name: Celastraceae.

Common name: Malkuni.

English name: Climbing staff tree, Black oil plant, Intellect tree.

Nature of plant: A large climbing shrub.

Part (s) used: Seeds.

Local uses: Seeds are stimulant, anti-inflammatory and intellect promoting and are useful in abdominal disorders.

12. *Gymnema sylvestre* (Retz.) R.Br.

Family name: Apocyanaceae.

Common name: Gurmar.

English name: Periploca of wood.

Nature of plant: A climbing shrub.

Part (s) used: Whole plant.

Local uses: Whole plant is used in treatment of

inflammations and leucoderma.

13. *Tinospora cordifolia* (Wild), Hook.f. and Thomas.

Family name: Menispermaceae.

Common name: Gulanca, Giloy, Gilori, Gurch.

English name: Heart leaved moon seed, Gulanca Tinospora.

Nature of plant: A large, glabrous, deciduous climber.

Part (s) used: Whole plant.

Local uses: Plant is a constituent of several Ayurvedic preparations used to cure general Inflammation and urinary inflammation.

14. *Cardiospermum halicacabum* L. var. *microcarpum*

Family name: Sapindaceae.

Local name: Lataphatkari.

Nature of plant: A climber.

Part (s) used: Leaf and seed.

Local uses: Dried leaves crushed to make tea used for itching of skin. Fresh crushed leaves are used as a poultice on swellings. Seeds are also useful for Curing inflammation in nervous system.

15. *Combretum indicum* (L.) DeFilipps. Syn: *Quisqualis indica* L.

Family name: Combretaceae.

Local name: Madhumalti.

English name: Rangoon creeper.

Nature of plant: A large climbing woody shrub.

Part (s) used: Whole plant.

Local uses: Plant paste is used as herbal medicine for the expulsion of intestinal worms with anti-cancer health benefits by reducing inflammation.

16. *Antigonon leptopus* Hook. Et Arn.

Family name: Polygonaceae.

Local name: Mexican creeper.

English name: Coral vine.

Nature of plant: A woody perennial climber with tendrils.

Part (s) used: Root.

Local uses: Root extract is used to cure inflammatory disease.

17. *Mimosa pudica* L.

Family name: Mimosaceae.

Local name: Lajwanti, Chui-mui.

English name: Sensitive plant.

Nature of plant: Annual semi-prostrate.

Parts used: Root and leaf.

Local uses: Root and leaf are used to cure inflammation of urinary tract and in the treatment of leprosy.

18. *Dioscorea alata / bulbifera* L.

Family name: Dioscoreaceae.

Local name: Zimikand, Rattalu.

English name: Aerial yam, air potato.

Nature of plant: A perennial climber

Part (s) used: Corms.

Local uses: Corms are used for treating throat inflammation, boils and syphilis.

19. *Boerhaavia diffusa* L.

Family name: Nyctaginaceae.

English name: Hogweed, Pigweed.

Common name: Sant, Bishkhapra.

Nature of plant: A perennial diffuse herb.

Part (s) used: Whole plant.

Local uses: Plants are used to cure all types of inflammations, scabies etc.

20. *Asparagus racemosus* Willd.

Family name: Asparagaceae.

Local name: Satawar, Satawari.

English name: Wild asparagus.

Nature of plant: A perennial diffuse twinner.

Parts used: Tuberous roots.

Local uses: Roots are useful to cure different types of inflammations, throat infection and leprosy.

Sl. No.	Name of Plants	Name of Family	Habit of Plants	Parts used
01.	<i>Momordica charantia</i> L.	Cucurbitaceae	An annual climber	Fruit
02.	<i>Cucurbita maxima</i> Duch. ex Lam.	Cucurbitaceae	An annual climber	Fruit and seed
03.	<i>Cucurbita pepo</i> L.	Cucurbitaceae	An annual climber	Fruit and seed
04.	<i>Luffa cylindrica</i> (L.) Roem.	Cucurbitaceae	An annual climber	Fruit
05.	<i>Trichosanthe scucumerina</i> L.	Cucurbitaceae	An annual climber	Fruit
06.	<i>Preacitrullus fistulosus</i> (Stocks) Pangalo.	Cucurbitaceae	An annual climber	Fruit
07.	<i>Diplocyclospalmatus</i> (L.) C. Jeffrey	Cucurbitaceae	An annual climber	Whole plant
08.	<i>Ipomoea eriocarpa</i> R.Br.	Covulvulaceae	A twinner herb	Root
09.	<i>Ipomoea pes-tigris</i> L.	Covulvulaceae	A twinner prostrate herb.	Whole plant
10.	<i>Abrus precatorius</i> L.	Fabaceae	An annual climbing shrub	Leaf
11.	<i>Celastrus paniculatus</i> Willd.	Celastraceae	A large climbing shrub	Seed
12.	<i>Gymnema sylvestres</i> (Retz.) R.Br.	Apocyanaceae	A climbing shrub.	Whole plant
13.	<i>Tinospora cordifolia</i> (Wild), Hook.f. and T.	Menispermaceae	A large, deciduous climber	Whole plant
14.	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	A climber.	Whole plant

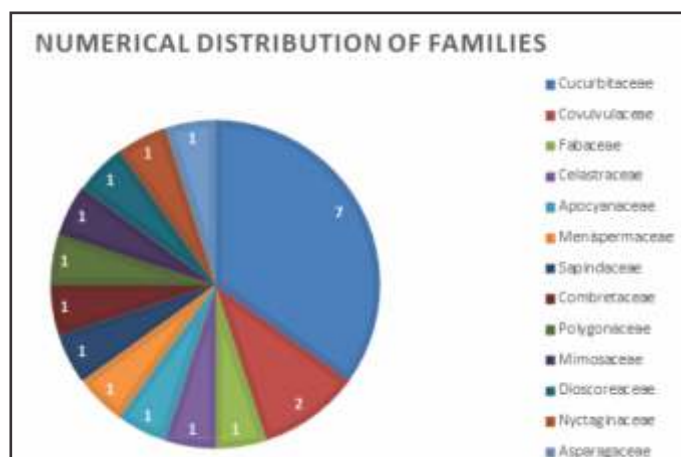
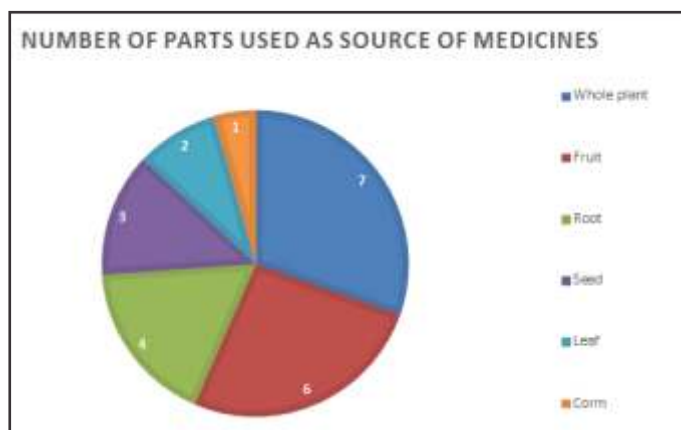
15.	<i>Combretum indicum</i> (L.) DeFilipps	Combretaceae	A climber	Whole plant
16.	<i>Antigonon leptopus</i> Hook. Et Arn.	Polygonaceae	A woody climber with tendrils	Root
17.	<i>Mimosa pudica</i> L.	Mimosaceae	Annual semi-prostrate	Root and leaf
18.	<i>Dioscorea alata/bulbifera</i> L.	Dioscoreaceae	A perennial climber	Corm.
19.	<i>Boerhaavia diffusa</i> L.	Nyctaginaceae	A perennial diffuse herb	Whole plant
20.	<i>Asparagus racemosus</i> Willd.	Asparagaceae	A perennial diffuse twiner	Tuberous root

RESULTS AND DISCUSSION

Medicinal plants are major components of traditional medicine system. A number of climbers/twiners medicinal plants used to cure inflammatory diseases in addition to treat eczema and other skin diseases are collected from the study area after interviewed with the local users. Out of these collections, 20 plant species belonging to 13 families are very important from medicinal point of view as used to cure inflammatory diseases by local people, observed during entire study period. All these plants have certain active chemical constituents which are responsible to cure a number of inflammatory diseases.

Among these twenty plant species, seven plants belong to family Cucurbitaceae, two belong to Convolvulaceae and one each from Fabaceae, Celastraceae, Apocyanaceae, Menispermaceae, Sapindaceae, Combretaceae, Polygonaceae, Mimosaceae, Dioscoreaceae, Nyctaginaceae and Asparagaceae. The different parts of these plants are locally used to cure a number of inflammatory diseases. Different parts of the plants like roots, stems, leaves, fruits and seeds like different parts of all these studied plants are used to cure inflammatory diseases by the local rural people. The methods of preparation fall into four categories viz., plant parts applied as paste, juice extracted from the fresh plant parts, powder made from fresh or dried plant parts, some fresh plant parts and decoction. External applications for skin diseases and internal consumption of the preparations are involved in the treatment of diseases.

Among these plants, few plants need conservation because they are reducing day-by-day due to over exploitation for above said purposes. This study gives an account on the diversity of medicinal plants and on



priority for conservation of medicinal plants.

SUMMARY AND CONCLUSION

The findings of the survey emphasized that herbal medicines are widely used by the local people of District West Champaran and these medicines have great potentiality to cure different types of inflammatory diseases besides certain type of skin diseases including eczema, leprosy etc. However, detailed chemical and biological studies on the extract are needed to isolate and characterize the biologically active principles for exploring. Anthropogenic activities such as unsustainable harvesting and

Climbers and Twiners used to cure Inflammatory Diseases



Cucurbita pepo L.



Ipomoea eriocarpa



Trichosanthes cucumerina L.



Ipomoea tigridis



Praecitrullus fistulosus



Momordica charantia L.



Diplocylos Palmatus



Abrus precatorius



Luffa cylindrica(L.)Roem.



Cucurbita maxima Duch. ex Lam.



Celastrus paniculatus



Antigonon leptopus



Tinospora c ordifolia



Asparagus racemosus



Combretum indicum



Gymnema sylvestre



Cardiospermum helicacabum



Dioscrea alata



Mimosa pudica



Boerhaavia diffusa

cultivation practices, over exploitation of bio-resources in the form of climbers / twiners have led to serious threat to such potential genetic resources available in this area. This has further led to the decline of such plants drastically in their natural habitat. Therefore the Ecologist, Ethno-botanist,

Pharmacologist, Anthropologist and Plant Taxonomist should pay attention towards the conservation of such resources which in turn will lead to develop strategy for conservation of rich biodiversity. The study further emphasizes upon the collection of detail information about climber/twiner plants of West

Champan for anti-inflammatory action and the presence of bioactive compounds in different plant parts.

The present work entitled is a result of two years extensive study. The vegetation of District Gopalganj has been selected for the present study regarding their medicinal uses and conservation. Due to ever increasing demand of medicinal plants growing in nature, it is highly desirable that steps to be undertaken for their conservation, protection, propagation and systematic scientific exploration for meeting out the future need.

Keeping in view the above facts, the present study forms the basis for the report on summary of the medicinal plants used for curing various ailments in the district Gopalganj. It has been observed and studied that the rural and local people of the study area are still strong belief of using medicinal plants and their drug preparations and same time these medicinal herbs are used to treat even the chronic disease. These medicinal plants are very much used in the folklores and different proverbs. The folklore on several medicinal plants and the formulation developed by using them is well recognized in different ethnic communities living in these areas.

ACKNOWLEDGMENT

Authors are very much thankful to the people of District West Champaran who showed their interest by sharing their experiences regarding the use of plant species to cure inflammatory diseases. Authors are also thankful to the Principal of Gopeshwarcollege, Hathwa for providing laboratory and other facilities for preparing and preserving herbaria.

REFERENCES

- Azaizeh H, Fulder S, Khalil k, and Said O. 2003. Ethnomedicinal knowledge of Local Arab Practitioners in the Middle East Region. *Fitoterapia*. 74 (1-2): 98-108.
- Carter R, Bryson, C.T and Darbyshire, S.J. 2007. Preparation and Use of Voucher Specimens for Documenting research in Weed Science. *Weed science*. 21 (4) 1101-1108.
- Haines H.H, 1921-25. Botany of Bihar and Orissa, (6 vols.) rep. edn 1961 (3 vols.) pub. Botanical Survey of India.
- Halliweli B, Aeshbach R, Liger J. 1995. The characterization of antioxidant. *Food chemistry and toxicology*. 33:601-617.
- Jain S.K and Rao R.R. 1977. *A Handbook of Field and Herbarium Technique*. Today and Tomorrow Publication, New Delhi, India.
- Mahesh B, Satish S 2008. Antimicrobial activity of some important medicinal plants against plant and human pathogens. *World Journal of agricultural Science*. 4: 839-834.
- Mann A, Banso A, Clifford L. 2008. An antifungal property of crude plant extracts from *Anogeissusleio carpus* and *Terminalia avicennioides*. *Tanzania Journal of Health Research*. 10 (1): 34-38.
- Shariff N, Sudarshana M.S, Umesha S, Prasad P 2006. Antimicrobial activity of *Rouwolfiatetraphyla* and *Physaliminima* leaf and callus extracts. *Afr. J Biotech*, 5:946-950.
- Singh A and Singh P.K. 2009. "An Ethnobotanical Study of medicinal Plants in Chandauli district of U.P, India," *Journal of Ethnopharmacology*. 121 (2) 324-329.