

# CHAPTER 4

## RESULTS AND DISCUSSION

## RESULTS AND DISCUSSION :

Various folk uses of *Calotropis gigantea* and *Calotropis procera* collected during ethnobotanical surveys in the selected sites are as follows :

(1) **Latex** : It acts depilatory and anthelmintic agent in action and useful in the treatment of various ailments such as, in the treatment of rheumatism, piles, eruption of body, ring worm, scabies, ulcer, leprosy, dropsy and toothache, bronchitis, cough etc.

- (i) In case of reumatism i.e. joint pain, the tribal and rural people apply the latex on painful joints for the relief of pain. It is also used in case of toothache by tribal people of the area under study. It acts as an analgesic agent.
- (ii) In case of abcess/boils, application of latex at primary or early stages is helpful in preventing the further growth/aggravation of boils.
- (iii) It cures leucoderma and ulcer. Latex of *C. gigantea* with honey and cold milk is used orally against ulcer.
- (iv) Latex is also used as local irritant in tribal areas.
- (v) In case of damaged/injured eyes i.e. cataract of bullocks/cows, latex of *C. gigantea* is used in tribal areas.
- (vi) Latex is used in case of eczema and scabies in the tribal communities. They applied latex in the affected parts of the body.
- (vii) It is used to kill the worms in wounds of animal.
- (viii) The latex is used in vigor and aphrodisiac tablets. Dates are deseeded, calotropis latex is put inside the deseeded dates. They are placed inside a cloth

bag and then clay is wrapped around. This is dried in open Sunlight. This dried ball is roasted so that the outer layer becomes red or reddish black. After cooling, the ball is broken and roasted dates are ground with *Piper nigrum* and medium sized pills are made. They are dried in shade. These pills are known as vigour and aphrodisiac tablets. Pills are taken in dose of one pill twice a day along with milk. These pills are used as tonic. These pills are also used in case of joint-pain and flatulance.

- (ix) Latex cures asthmatic problems. The latex of plant is used along with sugar candy, its affect is produced within 20 to 25 minutes. It is given thrice a day after a gap of one hour. It causes vomitting since it starts expectoration all cough is eliminated and patient is treated. This treatment is not given in a higher dose or to a patient who is also suffering from pneumonia or tuberculosis.
- (x) In case of cough and bronchitis, coconut is pierced through one of its eyes and is filled with the latex. Clay is applied all over the coconut and this ball is dried. Dried ball is roasted so that clay becomes red or reddish black and is cooled down. Now this ball is broken and medicated endosperm is ground to a fine powder. This powder is given along with honey to patients suffering from cough, bronchitis etc.
- (xi) For the treatment of eye disorders of animals e.g. web like over growths over cornea are treated by applying latex of the plant over tample.

- (xii) For the treatment of arthritis one tea spoon full of latex of *Calotropis procera* is mixed with 20 gm crystalline sugar and 1 gm calcium carbonate. Tablets of 1 gm each are prepared and given for 3-5 days twice daily.

**Root and Root bark (Madar bark) :** It has been used successfully in the treatment of syphilis, acute dysentery, tuberculosis etc.

- (i) In case of acute deep pain in the stomach thoroughly powdered root bark of *C. gigantea* mixed with jaggery and made in the form of paste is administered (1-2gm) twice a day for the relief of pain.

- (ii) The root bark made into paste with fresh water and applied to wound no other medicine is effective for the cure of the same.

- (iii) In case of scorpion sting or snake bite, the paste of fresh root is being applied.

- (iv) It act as strong purgative.

- (v) In case of asthma, cough and cold, 1 to 2 gm powdered root bark is given to the patient, twice a day with cold water or honey.

- (vi) If the aqueous extract of fresh root is applied on piles, it will give relief to the patient to some extent.

- (vii) 2 to 3 gm powdered root with water or honey is used to cure dysentery.

- (viii) The root of *Calotropis* is cut into very small pieces and then boiled with water.

When the content remain one fourth in quantity it is filtered and put aside.

When the sediments settle down supernatant is decanted and certain other

plant parts are added to it i.e. *Glycirrhiza glebra*, *Piper nigrum* and *Ellatteria*

*cardamum* alongwith pure Vansh-lochan, sugar is also added and boiled again.

So that composition becomes syrupy. It is called *Sherbet-madar*. 10 ml to 20 ml of this syrup 3 times a day is given to the patient suffering from cough, asthma, stomach ailments and rheumatic pain.

- (ix) The root bark along with *Piper nigrum* and rock salt is ground to a fine powder. The juice of yellowed leaves is mixed with this powder and medium sized pills are made and these are dried in shade. These are taken daily with butter oil, (Ghee) in a dose of 1 tablet twice a day.

This treatment cures lumbago, joint pain, inflammation etc. These pills are also used as tonic because they correct digestion. Along with this treatment medicated oil is also used. This oil is prepared by placing small pieces of *Calotropis* root in water over night. The extract is boiled so that the quantity remains half. Now castor oil and *Curcuma domestica* powder is added. This is boiled again. So that water is evaporated and oil remains. Massage of inflamed part with this oil is beneficial. Bathing after this massage is not recommended.

- (x) Old thick root of *Calotropis procera* is hollowed and filled with barely flour, heated in air tight earthen container till the flour is completely roasted. A dose of 5 gm flour is given twice daily for 3 months to a patient suffering from asthma.

- (xi) The root of *C. gigantea* with 'Gau-Muter' have 'Tantric' properties. So, the root bark act as diaphoretic, emetic, purgative, anthelmintic etc. and cures dysentery stomachache, dyspepsia, syphilis, lumbago, cutaneous infection etc. as described by the tribal or rural people and in literature.

- (xii) Root cures elephantiasis and dropsy. The paste of root bark made in water is applied on the affected area.

## Leaves

The leaves are being used mainly for subsiding joint pain, swelling or inflammation etc.

- (i) In case of injuries with inflammation, leaves after warming on a pan are used for the relief of pain
- (ii) In case of stomach pain leaves are applied by warming them on a pan and thereby putting these leaves which is pasted with mustered oil on the affected area and used as such for the treatment of leukorrhea in woman.
- (iii) The leaf extract is applied externally on stomach in case of leukorrhea and burning sensations in stomach.
- (vi) The tincture of leaves is used for curing intermittent fever.
- (v) The extract from yellowish coloured leaf is useful in curing ear pain by pouring couple of drops of leaf extract into the ear.
- (vi) The yellow leaf is being warmed on a pan and then put in 'Roti' and given it to the animal for the treatment of gastric troubles.
- (vii) The oil, in which leaves are being boiled is used for massaging the paralysed patient.
- (viii) The paste of leaves and seeds powder is used topically against a skin diseases.
- (ix) The waxy disposition on the leaf of *Calotropis* are scraped and small pills are made. Sometimes the leaf extract is also added to make these pills. These pills are taken in a dose of one pill twice a day to cure cough and bronchitis.

- (x) Fresh leaves along with ammonium chloride, black salt, *Piper nigrum*, *Trachyspermum* seeds are crushed together and this powder is made into tablets. After meals one to four tablets are taken. This is useful when a person is suffering from stomachache due to food adulteration.
- (xi) The medium sized half kg green leaves of *Calotropis* are boiled with water. Now these leaves are spread over a cloth in shade so that the extra water gets evaporated. Leaves are semidried. Dried *Zingiber officinale*, Chilly, *Piper nigrum*, *Coriandrum sativum*, semi roasted cumin seeds (*Cuminum cyminum*) and rock salt are ground and then they are placed in a glass container along with the leaves of *Calotropis*. Salt and leaves layer are placed alternatively and then lime juice is poured so that contents are totally submerged. This is taken regularly along with meals as 1-2 leaves of this pickle are beneficial for all digestion problems.
- (xii) If 2-3 leaves of *Calotropis* chewed slowly for 2-3 hours. It cures asthma. It is used as expectorant as well as it induces sleep and asthma is cured within a week.
- (xiii) To treat scorpion sting crushed leaves are used as snuff.
- (xvi) Poultice of warm leaves is being applied topically on unripe boils for their ripening.
- (xv) To make skin of children soft and shining paste of *Calotropis* leaves, *Alstonia* leaves, *Pongamia* root and *Thevatia* root along with cow urine is being applied over the body.

- (xvi) The diseases of spleen are treated by using *Calotropis* leaves and common salt. These two things are desiccated over heat (half burned) and ground into a fine powder. This powder is used along with curd for some days.
- (xvii) Garlic cloves are wrapped by *Calotropis* leaves and then heated over a fire. Now these garlic cloves are removed and juice is extracted. This juice is poured in ear canal to relieve inflammation and pus formation.

#### Flowers :

The flowers are being used for curing indigestion, tumor, inflammation, cold, cough and asthma etc.

- (i) In case of cold, cough and asthma the paste of powdered flowers applied on chest against these ailments by the tribal people.
- (ii) When the paste of flowers with water applied on the inflammatory part, it subsides the swelling.
- (iii) Shade dried *Calotropis* flowers along with *Trachyspermum* seeds are ground and pills are made by adding pure jaggery syrup. One to two pills, twice a day or thrice a day are given to the patient. This corrects flatulence, stomachache along with cough. This is treated in high esteem.
- (iv) Fresh flowers of the plant along with *Piper nigrum* and refined sugar are ground to a fine powder. Half gram of this powder is given along with milk thrice a day. This treats hysteria and epileptic attacks.
- (v) The flowers are roasted over a frying pan and then it is crushed into a fine powder. This powder is given along with water or preferably honey to treat whooping cough of children.

- (vi) The flowers are often used in 'hawan' (religious sacred fire) and for offering 'Lord-Shiva'.
- (vii) In case of migraine the young vegetative tip of the plant plucked and wrapped with jaggery and taken before Sunrise. This treatment is given for three days. If young vegetative top is not available then in place of it, the latex of the plant is taken along with jaggery to cure migraine:

All five parts of plant are dried and burnt so that only ashes remained, these ashes are dissolved in water and put aside for sometime. When the sediments settled down, supernatant is decanted and then boiled thoroughly so that all water gets evaporated. The remanent is *Calotropis salt*. This salt is taken in a very small quantity, two to four grains of this act as very good expectorant.

The knowledge of medicinal plants in India is very old. Since times immemorial, plants and their products have been used as medicine, by ancient people for the treatment of various ailments. Most of the traditional medicines are mainly based on the uses of the whole plant parts in the form of powder, paste or decoction of fresh or their fermented products. These are obtained either from one or more plant product of diversified characteristics. This indicates that traditional medicines are prepared considering a whole view of the disease development. The ancient Indians were the custodians of a highly evolved civilization. Their approach towards life was very comprehensive, highly integrated with environment and therefore, was ecologically sound and sustainable. It was aimed at promoting a peaceful coexistence with all living organisms as well as harmony with the physical environment. The

ancient people observed their surroundings with great awe and wonder. The concern for environment for health and maintenance of proper public hygiene was deeply embedded in the ancient Indian customs and traditions. We know that man, in various kinds of ailments turns to plants which they know, perhaps, the primitive man happen to cure in much the same way by trial and error. The result being passed on from one generation to the next. Many useful plants and their medicinal properties were known to the people in the form of customs and rituals. The ancient masters tactfully implemented much of their value oriented teachings through certain rituals, taboos and totems and made the people to observe it as spiritual duty.

Most of the Indian population live in rural areas. These areas are rich in vegetation provide good scope for traditional medicinal system. The traditional Indian life is based on a subtle and salient relationship with nature. The ancient sages identified man as integral part of nature and stressed maintaining importance of complete harmony with all the living and non-living components of earth. Thus ancient people advocated to lead a healthy and happy life by following a hygienic and ethical life which later evolved as customs and value oriented traditions. Traditions and customs clearly show the medicinal properties of plants. If these traditional natural systems of medicine are being used and adopted, the problem of modern antibiotics and drugs can be solved and new dimension to human health and hygiene may evolved.

Now a days people are very much eager and awakened about the medicinal importance and properties of plants in their day to day life. Plants were thought to be the best weapon for combating ailments and as preventive cure against diseases.

Indigenous form of medicine is still being practised in all parts of India traditionally and especially in rural and tribal belts. Plants still form a major part of ingredient in almost all systems of medical science. Ayurvedic system of medicine is growing more popular among people than allopathic system, because the 'modern drugs' or 'synthetic drugs' act as foreign substances and cause various hormonal changes in the body with so many other side effects. Due to these side effects, scientists also compelled to think for safety and are discovering medicines from traditional and folk lore drugs of plant origin.

During last few decades, allopathic medicine has also started searching for medicinal plants and as such a number of plants are finding more and more use in this system of medicine. Ayurvedic and other traditional system of medicine purely depend on wild plants for the preparation of medicines. Herbal products provide much more medicinal value at village level in India than allopathic system of medicine.

According to Jain (1967) for any ethnobotanical studies, it is usually more convenient and useful to delimit the area of study by suitable geographical units. By following this method, different sites were selected in and around 50 kilometre periphery of Sagar town of Madhya Pradesh which is inhabited by different tribal or rural people belonging to the economically poor classes and tribal or rural illiterate population of the state, to extract the knowledge from these people about various medicinal properties and various administrative methods to cure diseases/ailments. These tribal people depend upon their surrounding for food, shelter, medicine and various other aspects of life. Due to these reasons, these tribal people have been

found to possess a large volume of information about traditional medicine or medicinal uses of plants.

The data collected by taking interviews from various tribal or rural people reveals that all plant parts of both the species of *Calotropis* are very important from medicinal point of view and all parts of this plant are being used for the treatment of various ailments by the rural or backward people. There are some diseases i.e., asthma, epilepsy, leprosy, rheumatism, leukorrhea, syphilis jaundice, piles etc. which are very dangerous and chronic. All these ailments which may be curable or partially curable by allopathic system of medicine can be cured by traditional system of medicine, because these preparations are cheaper and without any side effects.

Voluminous literature is available on various morphological aspects of the plant *Calotropis* of family Asclepiadaceae. But in the field of ethnomedicine enough work have not been done. In the present work ethnomedicinal studies have been carried out on two species of this family i.e., *Calotropis gigantea* and *Calotropis procera*. The ethnobotanical studies during last two and half years, revealed valuable information regarding the uses of *Calotropis*. During surveys it was observed that flowers, leaves, root, bark and latex etc. are commonly used by the tribal in their remedies, for the treatment of various ailments. The method of collection of information were same as adopted by various workers previously.

For the preparation of remedies for the treatment of various ailments the following methods were adopted by these tribals or backward classes. Similar methods were also followed by Adivasis of Bastar (Jain, 1965)

1. Plant parts directly used for external application.
2. Plants part is boiled in water to make decoction.
3. Plant parts dried powder.
4. Plant parts rubbed.
5. Plant parts powdered and made into paste.
6. Boiled water is poured over a sieve which contains plant parts. This is known as infusion.
7. The juice of the plant part is boiled with gingelli oil to make medicated oil.

This collected data about the medicinal uses of the plants was verified with the help of the authentic published work. This also helps to bring out reliable information not only on species but also about the doses and prescriptions. The results obtained during the ethnomedicinal studies of this plant are being found similar as reported by other workers. For example, to cure asthma, cold and whooping cough, in rural areas flowers are given orally in the crushed powdery form with water or honey or bandaged on chest against these ailments. Similar results were reported in Ayurveda (Kirtikar, R.K. Basu, B.P., Indian Medicinal Plants).

It may be concluded that the most common method of preparing remedies is to make past of fresh plant material. A small quantity of water honey, pepper, milk, salt etc. is common additive during the application of remedies. It was also observed that mode of application for particular ailment was almost same in different surveyed location.

Verma et. al., (1995) reported the flowers of *C. gigantea* are used by the tribals to cure whooping cough.

It may be inferred from ethno-botanical survey that leaves, roots and latex of this plant are mostly used by the rural or tribal people to cure their various diseases i.e. for joint pain, abdominal-ache, ear pain, scorpion sting, inflammation, injuries and skin diseases etc. Similarly, various workers reported its various usage. Singh and Maheshwar (1989) reported that warmed leaves are bandaged in rheumatic pain. Singh and Prakash (1994) reported that paste of leaves with aqueous extract of *Tephrosia purpurea* is given as antidotal for snake-bite. Chaudhuri et al. (1975) reported that the bark of the root is used by kondh, Bhunuj and Saora tribes of Orissa for curing leprosy. The root bark is pounded in water and mixed with the liquor prepared from *Madhuca indica* flowers. The mixture is applied locally. Jain et al. (1989) reported that Bhils of Dahanu Forest Division in Maharashtra use its root extract to kill guinea worms. Tribal people made pills from its root with jaggery given in the morning on an empty stomach to kill the guinea worm. Girach (1992) reported that kondh tribe of Orissa use roots for rheumatic pain and stomach disorders. Shah et al (1983) reported that tribals of Dahanu forest division in Maharashtra used latex on ring worm and other skin diseases. Shrivastava and Verma (1981) reported that bark is used in epilepsy treatment.

It was also observed that the different plant parts of the same plant is used for a number of diseases in different mode of application. For example, in case of *C. gigantea* leaf is used for the treatment of inflammation injury, wound, boil, etc,

**Table -1 : Plant species and their parts used against different diseases :**

S.No	Disease	Plant species used against disease.	Plant part used
1.	Dysentery	C. procera	Dried bark of root
2.	Dropsy	C. procera	Latex
3.	Leprosy	"	"
4.	Rheumatism	"	"
5.	Toothache	"	"
6.	Local irritant	"	"
7.	Skin diseases and swelling	C. procera/gigantea	Leaves
8.	Scorpion sting	C. procera .	Leaves
9.	Snake bite	C. gigantea	Root
10.	Asthama	C. gigantea	Root bark/tincture of leaves
11.	Fever	C. gigantea	Leaves
12.	To kill worm in the wound of animals	"	Latex
13.	Rheumatism	"	Latex
14.	Tumor	C. procera	Root bark
15.	Indigestion	"	Flowers
16.	Gastric Trouble in animals	C. gigantea	Leaves
17.	Purgative	"	Root
18.	Elephantiasis	C. gigantea	Root bark
19.	Dropsy	"	Root bark
20.	Syphilis	C. gigantea	Root bark, leaves
21.	Cough, Cold	"	Flowers
22.	Inflammation or Swelling	C. procera	Leaves

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S.No	Disease	Plant species used against disease.	Plant part used
23.	Stomachache	<i>C. gigantea/procera</i>	Leaves
24.	Cataract in animal	<i>C. gigantea/procera</i>	Latex
25.	Jaundice	<i>C. gigantea</i>	Root
26.	Malaria	"	Root
27.	Piles	"	Aq. Extract of Leaves or root
28.	Tumor	"	Latex
29.	Dyspepsia	<i>C. gigantea</i>	Root bark
30.	Scabies	<i>C. procera</i>	Latex
31.	Ulcer	<i>C. gigantea</i>	Latex
32.	Leukoderma	<i>C. procera</i>	Latex
33.	Leukorrhea	<i>C. gigantea</i>	Leaves
34.	Making gun Powder	"	Root bark
35.	Earache	<i>C. gigantea</i>	Aqueous extract of Yellowish coloured leaves
36.	Offering Lord Shiva & Hawan	<i>C. gigantea</i>	Flowers
37.	Leucoderma	<i>C. gigantea/procera</i>	Latex
38.	Malaria	<i>C. procera</i>	Root
39.	Leukorrhea	<i>C. gigantea</i>	Leaves
40.	Cough, bronchitis	<i>C. procera</i>	Latex
41.	Pneumonia or tuberculosis	<i>C. procera</i>	Latex
42.	Intermittent fever	<i>C. gigantea</i>	Leaves
43.	Cough & bronchitis	<i>C. procera</i>	Waxy deposition on leaves
44.	Whooping cough	<i>C. procera</i>	Flowers

whereas root for the treatment of dysentery and latex is used to kill worms in wounds in the diseases of animals. During survey, it came to light that young tribal men and women were not aware about traditional remedies or medicines. Only one or two aged persons were found to be aware of traditional knowledge. Due to long traditional experience medicinemen were very much sure confident about the mode of treatment of these diseases. Modern generation does not understand the value and importance of this traditional system of medicine. So there is a great need to know about the value of this system in their daily life. People although very less in number possess good knowledge about the medicinal values and uses of this plant and they are still using this plant for curing various ailments.

The plant and its different uses for the treatment of various ailments which are given in tabular form; (Table-1), show that such important and valuable information regarding this plant remained unverified and unutilized. Therefore, it is necessary to popularise their identity and utility. This type of study and data become important & helpful to protect the Ayurvedic system of medicine.

## Appendix

### Explanation of Various Therapeutic Terms :

Analgesic	:	An agent that relieves pain without causing loss of consciousness
Anthelmintic	:	An agent destructive to worms
Alxipharmic	:	Having properties of alexin
Antisialagogue	:	An agent that inhibits flow of saliva
Asthma	:	A lung disease characterized by breathing trouble, coughing and feeling of suffocation and breath lessness.
Astringent	:	Causing contraction usually locally after topical application
Blister	:	A thin vesicle specially one on the skin containing watery matter
Boil	:	A localized pyrogenic infection originating in a hair follicle
Brochitis	:	Inflammation of one or more bronchi
Cataract	:	An opacity of crystalline lens of the eye or its capsule.
Catarrh	:	Inflammation of mucus membrane (particularly of the head and the throat) with free discharge.
Cold	:	A catarrhal disorder of the upper respiratory tract, which may be viral, a mixed infection or an allergic reaction, and marked by acute coryza, slight temperature rise, chilly sensations, and general indisposition.
Cough	:	Sudden noisy expulsion of air from lungs.
Depilatory	:	Having a power to remove hair or an agent for removing or destroying hair.
Dropsy	:	Leakage of watery part of the blood into any of the tissues or cavity.
Diaphoretic	:	A medicine that produces or promotes sweating, causing perspiration, this disease is also known as sudorific.
Diuretic	:	An agent that induces or stimulate urination.

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Dysentery	:	Dysentery caused by protozoa or bacteria causing inflammation of mucus membrane and gland and gives painful diarrhoea.
Elephantiasis	:	Enlargement of cutaneous and sub-cutaneous tissues
Emetic	:	An agent that causes vomiting
Epilepsy	:	A nervous disorder involving temporary loss of consciousness with or without convulsions and muscular spasms.
Expectorant	:	An agent that promotes expectoration i.e. coughing up and spitting out of material from the lungs, bronchi and trachea.
Inflammation	:	A protective tissue in response to injury or destruction of tissue
Jaundice	:	Yellowness of skin, sclerae, mucus membranes and excretions due to hyperbilirubinemia and deposition of bile pigments.
Leprosy	:	A chronic communicable disease caused by <i>Mycobacterium leprae</i> and characterized by the production of granulomatous lesion of skin, mucus membranes and peripheral nervous system.
Leukoderma	:	An acquired condition with localized loss of pigmentation of the skin.
Leukorrhoea	:	A whitish, viscid discharge from the vagina and uterine wall
Lumbago	:	Pain in the lumbar region.
Malaria	:	An acute chronic disease characterized by intermittent fever with chill.
Paralysis	:	Loss or impairment of motor function in a part due to lesion of the neural or muscular mechanism; also, by analogy, impairment of sensory function.
Piles	:	A hemorrhoid like thickening of the mucus membrane at the lower end of an anal fissure.

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Purgative	:	Causing bowel evacuation particularly one stimulating peristaltic action.
Rheumatism	:	Disease of muscles, tendons, joints, bones or nerves resulting in discomfort and disability.
Sore	:	Variety of boil or wound
Stimulant	:	An agent that increases functional activity of an organ or the whole body.
Syphilis	:	A venereal disease characterized by a variety of lesions
Tincture	:	An alcoholic or hydro alcoholic solution prepared from an animal vegetable drug or chemical substance.
Tonic	:	A drug that invigorates or improve the normal tone of the organ.
Wound	:	Incision in soft tissues, caused by external injury.

**Surveyed Localities of Sagar (Fig. 1)**

<b>S.No.</b>	<b>Name of place</b>	<b>Abbreviation used</b>
1.	Patharia	Path.
2.	Pithoria	Pith.
3.	Dalpatpur	Dal.
4.	Ramna	Ram.
5.	Rehli	Reh.
6.	Univesity Hills Sagar	U.H.S.
7.	Around University Campus	A.U.C.
8.	Makronia	Mak.
9.	Tili	Til.
10.	Mohli	Moh.
11.	Rahatgarh	Rah.
12.	Gopalpura	Gop.