

Some Ethno-Medicinally Important Plants from Chhattisgarh, India, with Caution Stigma in Reference to their Abortifacient Activity

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Abstract: *Plants have been utilized as medicines for thousands of years. Most of such plants have been already known for their medicinal values and traditional uses, providing the health-care to the majority of the people in a curative approach. Their identity as the direct therapeutic agents have attributed to their ethno-medicinal importance, helpful in curing or in prevention of many diseases. However, at the same time, some of their therapeutic properties have proven to be erroneous. The present work pivots on the documentation of 15 such common medicinal plants from Chhattisgarh, India, ethno-medicinally important, but should be cautiously used when treatment involves pregnant women due to their unusual activity of being 'abortifacient'. However, this property of some medicinal plants is considered beneficial by the tribal people as the plants are used to induce abortion which is a common practice among them.*

Keywords: Ethno-medicinal, Abortifacient, Abortion, Therapeutic

1. Introduction

The plants have been used in the form of crude drugs and in other herbal formulations for thousand of years (Samuelson, 2004). The tribes and ethnic groups from different countries have immense knowledge about the medicinal value of such plants. The tribes are also skilled to use different plant parts in their natural state, or in the form of extracts and oils, to cure many ailments. Although modern medicines are widespread, but traditional tribal medicines still are used in many developed countries across the world. The main ingredients of the tribal medicines are derived from various plant sources (Anisuzzaman *et al.*, 2007 ; Rajasekharan & Ganeshan, 2004).

The medicinal properties of the plants is attributed to the action of the phytochemicals already present in the plants. Consequently, the significant biological activities so exhibited are like anti-oxidant, anti-inflammatory, anti-spasmodic, anti-cancer, hepato-protective, immune-modulatory, anti-septic, laxative, and many more, that provide the plants their therapeutic value. Such pharmacological actions help in reducing the incidences of diseases. In spite of so many ethno-medicinal aspects of medicinal plants, there are many species that exhibit unusual, but harmful biological activity of being toxic or abortifacient (Pieroni *et al.*, 2000; Gurib-fakim, 2006).

'Abortifacient' property is a caution stigma as it may cause abnormal termination of pregnancy in pregnant women. However, many ethnic groups consider it as an important medicinal property, enabling in getting rid off the unwanted pregnancy, without any legal or society interferences (Tarafeder, 1983, Yadav *et al.*, 2006). A plant is said to have

'abortifacient activity' due to the presence of chemical substances that induce abortion. Common abortifacients are those which are used in performing medical abortions. However, there are also several herbs and plants with abortifacient claims, effective, either by themselves, or if taken in certain doses or mixtures. Since ancient times, abortions with the use of abortifacient plants have been a common practice among the tribal communities. The common examples of such abortifacients known are Papaya, Pomegranate, Bitter Melon, Wild Carrot, Nutmeg, Saffron and Tansy (Noumi & Tchakonana, 2001).

The present paper emphasizes on the documentation of 15 medicinal plants, commonly occurring in different areas of the State, Chhattisgarh, India, that are well known for their vast range of ethno medicinal uses, but are abortifacients, hence to be used with caution. However, they are adopted as herbal remedies by the tribal women for abortion.

2. Materials and Methods

The present work progressed towards its goal, with the extensive field survey of different parts of the state, Chhattisgarh, particularly those rich with tribal inhabitants, such as, Balod, Narayanpur, Jhanjgir Champa, Jashpur and Surajpur. The work also included perusal of published literature, and the herbarium specimens from different herbaria were referred to document information. The study was also supported by the spot survey regarding the folk utilization of the plants used by the different tribes of Chhattisgarh. The data and information was collected through interview methods with the tribal women, and also the informants like Ojha, Vaidya, Mukhya and Herbalist. Some of the tribal groups of

the State who were the sources of informations regarding ethno-medicinal uses of certain medicinal plants and their abortifacient activities were Maria, Bhatra, Halba and Dorla of Bastar tribes, and also Gonds and Pandos.

3. Results and Discussion

Based on the field survey, published literature, and information obtained through the ethnic groups from some parts of Chhattisgarh, enumeration of 15 commonly growing medicinal plants was done, with their ethno-medicinal uses, and the plant-parts that are supposed to be abortifacient. Such important plants are as follows:

1) *Achyranthes aspera* Linn.:

Family : Amaranthaceae
Common name(s) : Prickly-chaff-flower plant,
Chirchita, Latjeera, Onga, Apamargah.
Plant-parts used : Roots, Leaves, Seeds.

Ethno-medicinal use

Useful in cough, cold, bronchitis and asthma; Seeds helpful in abdominal and colic problems ; Leaves as best remedy for skin diseases, leprosy, scabies, boils and acne; Reduce painful inflammations and rheumatic pain ; Useful in curing disorders related to renal and vesicul canaliculi ; Good for cardiac disorders and anaemia ; Also as an antidote for snake-bites.

Abortifacient activity

Fresh root is used to induce abortion by many tribal women. The paste of fresh root mixed with lukewarm water is used to control bleeding after abortion by some tribes in some parts of the State.

2) *Annona reticulate* Linn. :

Family : Annonaceae
Common name(s) : Ramphal, Bullock's heart
Plant-parts used : Roots, Bark, Leaves, Fruits

Ethno-medicinal use

Root decoction and root bark is useful for fever, epilepsy, toothache and gum problems ; Bark and the fruits are a good remedy for diarrhea and dysentery; Crushed leaves are useful for boils, abscesses and ulcers; Warmed leaves applied externally over the abdomen relieve indigestion in babies and children ; Leaves are used to prepare tea for relieving colic ; Plant is helpful in reducing stress, anxiety, muscular pain and in wound healing.

Abortifacient activity

Seeds in powdered form, alongwith black pepper, when consumed by pregnant women can terminate pregnancy. It is effective for 3-4 months of pregnancy only.

3) *Acacia catechu* Linn. :

Family : Fabaceae / Mimosoideae.
Common Name(s) : Kattha, Cutch tree, Khair, Kat,
Cacho, Khadira, Black Catechu

Plant-parts used : Bark, Pith-region, Heartwood.

Ethno-medicinal use

Useful in asthma, cough and bronchitis ; Relieves stomatitis, piles and colic problems ; Effective against sores, foul ulcers, gastric or peptic ulcers, wounds and skin afflictions; Helps to control swelling in spleen, diabetes, obesity and splenomegaly ; Aqueous extract is used as the gargle to relieve gingivitis, sore throat and hoarseness of voice ; Good stimulant in improving breast milk ; Curative agent in case of leprosy and leucoderma.

Abortifacient activity

Bark juice, if taken orally for the first 2-3 months of pregnancy, is considered by the tribal informants, to result in abortion. Also it is considered as a natural birth-control agent.

4) *Abrus precatorius* Linn. :

Family : Fabaceae
Common name(s) : Rosary beads, Rosary peas, Gunja,
Indian Liquoric.
Plant-parts used : Roots, Leaves, Seeds.

Ethno-medicinal use

Used as an effective tonic to instill vigor and vitality ; Root extract relieves eye complaints and conjunctivitis ; Reduces inflammation that spreads to the face and neck ; Useful for granular ophthalmia and epithelioma ; Intensifies sexual desires ; Useful for keratitis, myocardial infarction and cardiomyopathies ; Good for reducing cellulites, gastritis, nephritis and brain tumor; Effective in epilepsy, septicemia shock, tetanus, purpura and cholera ; Good for hair growth and getting rid off dandruff ; Powdered roots and leaves relieve frozen shoulder and major skin diseases.

Abortifacient activity

Powdered seeds in aqueous solution, if taken in empty stomach is known to induce abortion.

5) *Acacia nilotica* Linn. :

Family : Mimosoideae
Common name(s) : Black babool, Babul, Kikar, Babhul,
Babhoola, Indian gum Arabic tree
Plant-parts used : Stem, Stembark, Gum, Leaves, Fruits,
Seeds.

Ethno-medicinal use

Useful for haemorrhagic diseases and seminal weakness ; Bark is used to cure skin weakness ; Bark is used to cure skin diseases such as eczema, leprosy, leucoderma, and oral ulcers ; Bark and gum are used against cancers of mouth, bone and skin ; and also the tumors of ears and testicles ; Leaves and pods are effective in diarrhea, dysentery and bleeding piles ; Helpful in treatment of sclerosis, tuberculosis, small-pox, and also menstrual problems in females; Good remedy for liver and spleen problems; Useful for fractures and dislocations of bones.

Abortifacient activity:

Gum of the babool plant is known to be abortifacient. According to tribal informants, the gum of the plant, mixed with Hing on a small stick when inserted into the vagina for three days, is known to successfully abort the pregnancy upto 2 months.

6) *Bombax ceiba* Linn. :

Family : Bombacaceae
Common name(s) : Silk cotton tree, Semal, Indian Kapok tree.
Plant-parts used : Stem, Bark, Root, Leaves, Flowers.

Ethno-medicinal use

Powdered roots cure seminal disorders ; Roots are helpful in leucorrhea, over-bleeding problems of menstruation, and in improving breast milk ; Powdered roots with black pepper and dry ginger relieves cold and cough ; Heartwood decoction is useful for diabetes ; Stems thorny part is good for acne, skin blemish and pigmentation ; Bark is used to relieve fever, stomach ache, bleeding gums, cholera and stings ; Gum is effective against pulmonary tuberculosis and influenza ; Shoots are good for ulcers, syphilis, leprosy and insect-bites; Leaves help in blood purification ; Flowers with honey, desi-ghee and milk is effective against weakness and cutaneous troubles.

Abortifacient activity:

Seeds are abortifacient. Seed powder along with sugar molasses, hing and certain herbs is known to induce abortion.

7) *Carica papaya* Linn. :

Family : Caricaceae
Common name(s) : Papeeta, Papaya.
Plant-parts used : Roots, Leaves, Fruits, Seeds, Flowers.

Ethno-medicinal use

Fruits are helpful in digestion, and in reliving constipation and gastric disorders ; Fiber helps to increase bowel movement and easy passage of stool ; Effective against rheumatoid arthritis, osteo-arthritis and reduce inflammation ; Prevents infections of intestinal worms ; It is used as great revitalizing agents and in cosmetics, and is helpful for skin infections ; Root paste provide relief from toothache ; Latex is good for acne and burns ; Risk of developing 'macular degeneration', an eye disease, is reduced by papayas in diet ; Good for weight-loss and keeps the heart healthy ; Leaves are effective against breast, pancreatic and other cancers ; help in improving immunity, and in treatment of irregular menstruation in women.

Abortifacient activity

Latex of raw papaya fruit, if, taken orally for a few days often result in termination of pregnancy. This is the reason why the pregnant women are not allowed to eat too much of papaya during their pregnancy period.

8) *Cajanus cajan* Linn. :

Family : Papilionaceae
Common name(s) : Red gram, Congo pea, Pigeon pea, No-eye pea,
Arahad , Arahar
Plant-parts used : Stem, Roots, Leaves, Seeds.

Ethno-medicinal uses

Leaves are used to stop blood flow, and for healing wounds and bedsores ; Also used for malaria ; Leaf paste is useful for jaundice, diabetes, measles and piles ; Leaves are effective against tongue sores, gum inflammation and spongy gums ; Also used to cure lungs, cough, bronchitis and chest disease ; Dried root powder is good for purifying blood ; Seeds and leaves are applied as poultice over the breast to induce lactation.

Abortifacient activity

Skin of Arhar seeds are considered as abortifacient, especially when taken along with some other essential herbs, all together in powdered form. It can cause abortion upto 2-3 months of pregnancy.

9) *Cuscuta reflexa* Roxb. :

Family : Convolvulaceae
Common name(s) : Dodder plant, Amarbel, Akashbail, Akashavalli, Swarnlata
Plant-parts used : Whole plant ; Stem, Leaves, Seeds.

Ethno-medicinal use

Stems are used for treating constipation, diarrhea, liver complaints and flatulence ; When mixed with honey, plant extract cures itching, scabies, rashes and skin allergies ; Is a good hair tonic used to prevent hairfall and reduce dandruff ; Spleen enlargement is cured ; Relieves lower back pain, headache, lumbago and muscle pain ; Juice of the plant is used to treat the urinating problems and jaundice ; Herb helps to expel worms and in intestinal inflammation ; Akashavalli juice is used as eye drops to treat conjunctivitis, blurred vision and tired eyes ; Effective against chronic fever and cough ; Useful as blood purifier and cleanser of the body.

Abortifacient activity

Paste of the whole plant mixed with latex of green Pepe (papaya) is coated on fresh root of Chirchiti, and placed in the vagina of the pregnant tribal women for few hours, is known to result in abortion. Also the fresh *Cuscuta* extract boiled with the *Polygonum* seeds and black pepper, when taken by the pregnant women as filtrate , in early morning, on empty stomach for 3-4 successive days can induce abortion.

10) *Chenopodium album* Linn. :

Family : Chenopodiaceae
Common name(s): Bathua, Cheel Bhaji, Bettusag, White goosefoot, Wild Spinach
Plant-parts used : Leaves, Flowers, Seeds.

Ethno-medicinal use

Plant used in tea is good for stomach-ache, diarrhea, and improves appetite; Leaves as poultice are effective over wounds and bites; Leaves are useful for arthritis, rheumatism and joint pain ; Leaf infusion is used for spleen enlargement, hepatic disorders and intestinal ulcers; Stem juice is useful for freckles and sunburn ; Seeds are good to treat urinary problems ; Fibers cure constipation and bowel syndromes ; Bathua is good for heart, purifies blood and improves haemoglobin level.

Abortifacient activity

Seeds of *Chenopodium album* are known to show abortifacient activity, aiding in abortion. The herbs' biological activity of anti-fertility and sperm immobilizing also are considered responsible for inducing abortion in pregnant women.

11) *Caesalpinia pulcherrima* Linn. :

Family : Fabaceae
Common name(s) : Jiti, Rajamally
Plant-parts used : Roots, Stems, Leaves, Seeds.

Ethno-medicinal use

Useful in colic pain and abdominal disorders; Helpful in treatment of Chronic fever and malaria ; Seeds and leaves are used for leprosy, ulcers and skin problems ; Also help in relieve of intestinal worm-infections and flatulence ; Leaves are used in treatment of jaundice and liver ailments.

Abortifacient activity:

Bark is considered to be abortifacient, and the bark juice when administered orally on empty stomach for the first 3 months of pregnancy can cause abortion. Also the intake of grinded Jiti mixed with dried powdered roots of Tulsi, alongwith water, can cause termination of pregnancy. Dried leaf infusion, about 1 cupful given early morning to pregnant women can cause abortion.

12) *Gloriosa superba* Linn. :

Family : Liliaceae
Common name(s) : Glory lily, Flame lily, Ulat chandal, Climbing, lily, Kalichari, Kathari, Languli
Plant-parts used : Roots, Tuber, Leaves, Flower

Ethno-medicinal use

Tubers are useful in ulcers, piles, colic, cholera and leprosy ; Extract is a good remedy for infertility and impotency ; Used in the treatment of Snake bites and scorpion stings ; Useful for gout and rheumatism ; Leaf sap is used for pimples and skin infections ; Effective in urological and neuralgic pains ; Tuber extract is used to kill lice from hair ; Leaf-paste when applied to the forehead and neck relieves asthma in children ; Used for the cure of cancer and smallpox ; Promotes the menstrual blood flow and gives relief to abdominal cramps.

Abortifacient activity :

Root tuber extract taken orally for 3 days result in easy abortion. The paste of fresh roots, along with a few seeds of black pepper taken with a glass of lukewarm goat milk at the bedtime, is used to induce abortion by the tribal women. Due to the characteristic of rhizomes of causing abortion, *Gloriosa superba* is also called "*Garbhaghatini*".

13) *Hibiscus rosasinensis* Linn. :

Family : Malvaceae
Common name(s) : Shoe-flower, Gudhal, China-rose, Jaba
Plant-parts used : Roots, Leaves, Flowers.

Ethno-medicinal use

Useful in cough, fever and venereal diseases; Helps in relieving constipation and pruritus ; Used to treat abscesses, ulcers and for wound healing ; Leaves are useful in burning sensation and for skin diseases ; Important role in expulsion of placenta ; Flowers are used for cardiac problems and as brain tonic ; Plant extract is useful for urinary ailments ; Effective against epilepsy, diabetes, cerebropathy and haemorrhoids ; Used to treat seminal weakness, urethrorrhea and menorrhagia.

Abortifacient activity

A paste is made out of the inner layers of the root bark, along with the seeds of black pepper. The whole paste thus obtained is mixed with some water and given to the pregnant woman as abortifacient.

14) *Momordica charantia* Linn. :

Family : Cucurbitaceae
Common name(s) : Pavakka, Bitter Gourd, Karela
Plant-parts used : Roots, Leaves, Fruits, Seeds.

Ethno-medicinal use

Used in the treatment of asthma and respiratory ailments; helps to cure skin diseases, rashes, acne, pimples and leprosy; Relieves joint pain and inflammation ; Good remedy for spleen and liver enlargement ; Effective against flatulence, piles and intestinal problems; Helps in curing urinary tract disorders, anaemia and blood infections ; Curing agent for eye infections ; Good treatment for relapse of uterus ; Used for cholera and diabetes.

Abortifacient activity

Raw fruit juice taken orally twice a day for about 5 days in the initial months of pregnancy may cause abortion.

15) *Thevetia peruviana* (Pers.) K. Schum :

Family : Apocynaceae
Common name(s) : Peela kaner, Kandail, Lucky nut, Yellow oleander
Plant-parts used : Bark, Leaves, Roots.

Ethno-medicinal use :

Bark is used in intermittent fever and malaria ; Useful in oedema and dropsy ; Relieves the rheumatic pain, arthritis and inflammation ; Leaves and seeds are useful in treatment of digestive and cardiac problems ; Roots are used in the form of plaster on tumors.

Abortifacient activity :

Seeds are known to be quite toxic. The consumption of paste prepared out of seeds along with adequate amount of sugar molasses, at bedtime, can induce abortion. But utmost care and precautions have to be taken, as it is used at the late stage of the pregnancy, and its overdose can cause profuse bleeding.

The above mentioned 15 plants are the commonly occurring plants in the state of Chhattisgarh, India, the 'Herbal state', known for its variety of medicinal plants, herbs and tribal diversity. These plants are used by the various native tribes because of their healing abilities and the biological activities. Hence the medicinal plants are used as the rich source of many potent and powerful drugs (Anil Kumar Dhiman, 2006, Uniyal *et al.* 2006).

The tribal inhabitants are real custodian of medicinal plants. Their way of using the plant-parts to cure various ailments is associated with their traditional belief of religious rituals and own medical practices. Amongst the plants used by tribal sects, almost all are ethno-medicinally important and contribute in the treatment or prevention of many diseases. Despite this, there are certain species which are known for toxic effect, anti-fertility and anti-implantation functions. Several ethno-medicinal herbs act harmful due to their abortifacient activity (Sahu, 2011 ; Rekka *et al.*, 2013).

Roots and seeds of the medicinal plants taken under study, are mostly known to be used for abortion by tribal women. However, there are also other plant-parts with active abortifacient property, such as stems, bark, resin, gum, and also leaves and flowers (Jadhav *et al.*, 2005). Traditionally the tribal women prefer plant medicines rather than modern medicines for gynaecological problems such as menstrual troubles, conception disorders, birth-control and abortion (Taraferdar *et al.*, 1983 ; Dusmanta *et al.*, 2012). The plant species studied have many medicinal uses, but the abortifacient and anti-fertility properties of some of these species have been reported from various parts of the country (Yadav *et al.*, 2006 ; Mali *et al.*, 2006).

The tribals use these plants exclusively for 'abortion'. Some of such plants act by their toxic property, and some by their pharmacodynamic functions. The phytochemicals and their peculiar reactions are mainly responsible for abortifacient activity. Papaya is the age-old home remedy usually used for abortion. The two important phytochemicals present in it, *viz.*, oxytocin and prostaglandin are responsible for initiating the abortion. Pineapple, rich in Vitamin C, when consumed in excessive amounts, may result in a herbal abortion. Infact, the Vitamin C present in large amounts in Pineapple prepares the

uterus to start contraction, and hence leads to abortion. Dried cotton roots are also known to cause termination of pregnancy (Patel, 2012 ; Sahu, 2011).

In the present work, *Achyranthes aspera*, *Acacia catechu*, *Acacia nilotica*, *Carica papaya* and *Gloriosa superba* are identified to be effectively used by the tribes of Chhattisgarh for abortifacient activity. Thus, the plants so rich in ethno-medicinal potentials, should be used with utmost precautions, especially by the pregnant women. The documentation of plants in this work would also help to preserve indigenous knowledge about the abortifacient activity of the plants.

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