



Medicinal Plants Used As Abortifacients - A Review

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ABSTRACT

The practice of herbalism plays a major role in the world even though allopathic medicines reached its advance state. The herbalism purely depends upon the plants which have especially medicinal effects. Each and every part of the plant is used for some medicinal use. These plants are undergone by testing their activity through pharmacological basis. There was large number of studies which supports the abortifacient activity. The use of plants as abortifacient and it is practiced by older time physicians in India. Still the tribal population mainly depends upon these plants for the sake of family planning and to induce abortion. Even though there is a rapid development in allopathic medicine, the faith has not been degraded towards herbal due to its side effects. The aim of this review is to discuss the plants which show its abortifacient activities. This may help the investigators to gain knowledge about plants which are having abortifacient activity.

Keywords: Herbalism, abortifacient activity, Allopathic medicine.

INTRODUCTION

Ethnobotany is a new field which deals with medicinal plants and their activities. These medicinal plants play a major role in human life. More than 35,000 plant species are used for medical purposes around the world. Nearly 80% of the world population still believes the use of traditional medicine for their health, in which plant extract is mainly involved. Even though there is a need of allopathic medicine, the usage of medicinal plants that could be replaced in place of allopathic medicines.¹ The term "abortion" actually refers to any premature expulsion of a human fetus, whether naturally spontaneous, as in a miscarriage or artificially induced, as in a surgical or chemical abortion.² An abortifacient (Latin: that which will cause a miscarriage) is a substance that induces abortion.³ In case of medical abortion techniques and usage of pills, it has more disadvantages, generally medical abortion is complicate and the drug side effects are high bleeding, nausea, headache, fatigue, fever, diarrhea, vomiting, hot flashes, and abdominal cramping and pain.⁴ In order to avoid these herbal abortifacient plants are used.

Disadvantages of using abortifacient pills

- The current abortifacient drugs - Mifepristone and misoprostol:
- Mifepristone - antiprogesterone, binds to the progesterone receptor to block the receptor, thus inhibiting progesterone from binding. It does not activate a true biologic response to progesterone; it does, however, have both weak antigluccorticoid and antiandrogenic activity. Mifepristone also softens and dilates the cervix, causes decidual necrosis (which leads to placental detachment), increases uterine lining prostaglandin release, increases uterine

contractions and enhances uterine sensitivity to administered prostaglandin.

- Misoprostol - prostaglandin, binds to myometrial cells to cause strong myometrial contractions leading to expulsion of tissue. This agent also causes cervical ripening with softening and dilation of the cervix.⁵
- There are many other medicines that can interact with Methotrexate. Methotrexate can cause birth defects and miscarriages, so women taking the drug must use a reliable method of birth control.⁶
- Due to usage of these drugs the bleeding will be very heavy, cramping can be severe, two visits to the provider are necessary.⁷
- Side effects include bleeding and cramping as the uterus contracts and push the pregnancy out of the body. The bleeding can be heavy at times, as well as the cramping. Some women experience nausea, vomiting and headaches. It is different for everyone. Severe side effects are rare, but the possibility of losing too much blood can happen, even though there are several difficulties in these techniques.⁸

Manual Aspiration

It must be performed early in pregnancy-as early as 3 weeks and no later than 7 to 8 weeks from the start of the last menstrual period. The process is not performed under general anesthesia and the patient is awake throughout the process, although rare (occurring in less than 0.5 percent of cases), serious complications such as infection are damage to the uterus and/or cervix may occur. Due to this bacteria can enter the uterus during the process and the infection is possible. This is more likely in the case of an untreated disease or sexually transmitted infection. The side effects are nausea, fever, pain and abdominal pain.⁹



Dilation and Evacuation

It is performed during the second 12 weeks of pregnancy—that is, between 14 and 20 weeks since the start of the last menstrual period. This is the most risky method than the other procedures described; it will cause easy damage to the uterus. Usually abdominal cramping and pain are common; most women recover quickly but cramps may continue for up to a week following the procedure. Bleeding may occur up to 2 weeks and full recovery may take up to 7 days and it is often a two day procedure with small dilators being inserted into the cervix the day before the procedure to begin the dilation; the dilators can cause cramping, bleeding and nausea in some women.¹⁰

Need of abortion

Induced abortion is needed to save the mother's life to prevent the birth of defective child. The need for abortion was divided into 2 categories. i.e.,

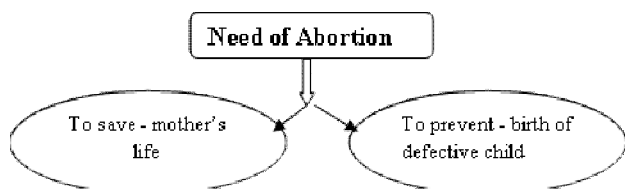


Figure 1: Need of abortion.

Mother's Health

In case of pregnancy under these circumstances, for example like Ectopic pregnancy Cancer, Heart disease, Autoimmune disorders, HIV and Certain other sexually transmitted diseases, abortion is the most needed one. To preserve the mental health of the mother, such as when the pregnancy is the result of rape or incest and it is one of the valid medical reasons for abortion. When the pregnancy is the result of an abusive relationship may also be considered to fall into this category.¹¹

Ecotopic Pregnancy

Ecotopic pregnancy is a major health problem and life threatening pregnancy for a woman of child bearing age. Usually the pregnancy occurs within the uterine cavity, but in case of ecotopic pregnancy it occurs outside the uterine cavity and the percentage range is 1.2-1.4% in all reported pregnancies. The risk factors are continuous bleeding, maternal, pelvic inflammatory diseases. These intratubal bleeding will expel the implantation, it will occur in the tubal end and it is termed as tubal abortion.¹²

Cancer

If a woman is affected by cancer during pregnancy, the delayed treatment might be too risky for the mother's life. A diagnosis of leukemia or lymphoma during the first trimester is an example and ending the pregnancy is the best option to save the mother's life. Chemotherapy and targeted therapies for the treatment of cancer are not safe for the baby in the first trimester. Gestational

trophoblastic tumor is a form of cancer directly associated with pregnancy.¹³

Congenital Heart Defects

Atrial and ventricular septal defects (ASD & VSD) and patent ductus arteriosus (PDA) are the most common congenital heart defects. For women who have a congenital defect and of pulmonary hypertension, the pregnancy is not recommended. Women with congenital heart may lead to heart failure. There is a greater risk that the baby will develop a heart condition if either parent has a congenital heart defect.¹⁴ In case of pulmonary hypertension, the pregnancy carries the highest risk of maternal mortality (30% to 50%) because of life-threatening rises in pulmonary vascular resistance that develop due to physiological changes occurring during pregnancy.¹⁵

Transmission of diseases from mother to foetus AIDS

Factors which increase the risk of transmission for AIDS is HIV (Human Immunodeficiency Virus).

They are

- Inject drugs or steroids where needles/syringes are shared
- Have a sexually transmitted infection, such as syphilis, genital herpes, chlamydia, gonorrhea, bacterial vaginosis, or trichomoniasis
- Have been diagnosed with hepatitis, tuberculosis, or malaria
- Clinical stage of HIV, including viral load (quantity of HIV virus in the blood).

The infected mothers may have the risk of children affected with aids and it is transmitted mother to child during pregnancy, labor, delivery or breastfeeding is called perinatal transmission.¹⁶ Many babies and children living with HIV are known to have the infection because their mothers are known to be infected.¹⁷ The other factors are the persons who are intravenous drug abusers, natives of affected regions, women having numerous sexual partners; living with infected individuals, prostitutes and transfused women belongs to risk groups. The HIV antibody testing is to be done at the beginning of pregnancy. The proportion of contaminated infants is approximately 40%. The disease in the infant is highly dangerous.¹⁸ A child is more likely to contract HIV from its mother if, she has advanced HIV infection or AIDS and has a high viral load or a low CD4 count and becoming infected with HIV during pregnancy is also likely to increase the risk.¹⁹

Autoimmune Diseases

If the immune system is affected, generally the autoimmune disease occurs and so that auto immune-induced miscarriages takes place, due to this the woman's body attacks the growing fetus or prevents normal pregnancy progression. Further research also has

suggested that autoimmune disease may cause genetic abnormalities in embryos and so that it leads to miscarriage.²⁰ Preeclampsia which develops after the 20th week of pregnancy. It causes dangerously high blood pressure, protein in the urine, headaches and swelling of a mother's hands and face. The only treatment is to induce delivery, which can be fatal to the baby if preeclampsia strikes too early in pregnancy.²¹

STD disease

The diseases like Syphilis, Gonorrhea, hepatitis B and genital herpes are transmitted to the baby during delivery as it passes through the birth canal and infects the baby while it is still in the womb. The most harmful effect of an STD is a stillbirth or baby that is born dead. In addition, if a baby is born with STD's the disorders are as follows, they are low birth weight, an eye infection, pneumonia or an infection in the bloodstream called neonatal sepsis. Brain damage, be born blind or deaf, develop meningitis an infection in the brain or have chronic liver disease or cirrhosis. If a baby does become infected, there are treatments for some STD's, although they might not prevent complications if the baby was infected in the womb.²²

Child birth defects

An abortion was proposed for fetus affected by several forms of hereditary and severe combined immuno deficiencies. The antenatal diagnosis and cytological studies lead to the above result.²³ Genetic diseases is a main cause for abortion, there may be lethal recessive gene phenomena which may cause repeated abortion. It is also caused by interactive gene products in all pregnancies.²⁴

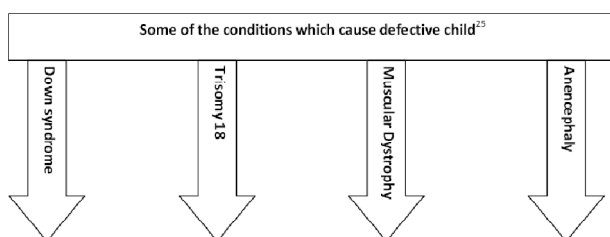


Figure 2: Defective Child Birth.

DOWN syndrome

Signs and Symptoms

The signs and symptoms of Down syndrome are characterized by the neotenzation of the brain and body. Down syndrome is characterized by decelerated maturation (neoteny), incomplete morphogenesis and atavisms individuals with Down syndrome may have some or all of the following physical characteristics:

- Microgenia (abnormally small chin)
- Oblique eye fissures on the inner corner of the eyes
- Muscle hypotonia (poor muscle tone)

- A flat nasal bridge
- A single palmar fold
- A protruding tongue

Growth parameters such as height, weight and head circumference are smaller in children with DS than with typical individuals of the same age.²⁶

TRISOMY 18

Unlike Down syndrome, which also is caused by a chromosomal defect, the developmental issues caused by Trisomy 18 are associated with medical complications that are more potentially life-threatening in the early months and years of life.

Typical characteristics of Trisomy 18 include:

Heart defects:

- VSD (Ventricular Septal Defect): a hole between the lower chambers
- ASD (Atrial Septal Defect): a hole between the upper chambers
- a narrowing of the exit vessel from the heart
- Kidney problems
- Part of the intestinal tract is outside the stomach (Omphalocele)
- The esophagus doesn't connect to the stomach (Esophageal Artesia)
- Excess amniotic fluid (Polyhydramnios)
- Clenched hands
- Pocket of fluid on the brain (Choroid Plexus Cysts)
- Rocker bottom feet
- Delayed growth
- Small jaw
- Small head (Microcephaly)
- Low-set ears
- Strawberry-shaped head
- Severe developmental delays Umbilical²⁷

Muscular Dystrophy

Muscular dystrophy (MD) is a genetic disorder that gradually weakens the body's muscles. It's caused by incorrect or missing genetic information that prevents the body from making the proteins needed to build and maintain healthy muscles. A child who is diagnosed with MD gradually loses the ability to do things like walk, sit upright, breathe easily and move the arms and hands. This increasing weakness can lead to other health problems.²⁸

It affects mainly the upper body and can also cause hearing loss, speech problems and changes in heart

rhythm. Symptoms often start around ages 10 to 26, but may also start at a later stage.²⁹

Anencephaly

Anencephaly is a serious birth defect in which a baby is born without parts of the brain and skull. It is a type of neural tube defect; this often results in a baby being born without the front part of the brain (Forebrain) and the thinking and coordinating part of the brain (Cerebrum). The remaining parts of the brain are often not covered by bone or skin.³⁰ Anencephaly is a neural tube defect. Anencephaly is a fatal birth defect characterized by the absence of a large part of the baby's brain and skull. It is a result of the upper part of the neural tube failing to close. This devastating condition is one of the most common neural tube defects. Anencephaly usually occurs early in the pregnancy and can be diagnosed by a pregnancy ultrasound.

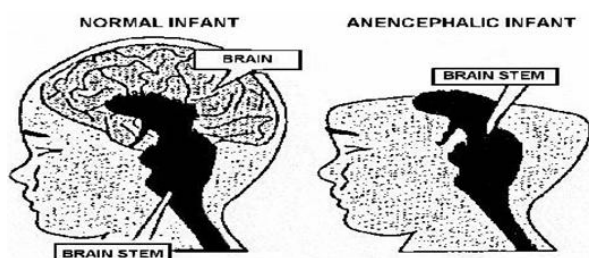


Figure 3: Difference between normal infant and anencephalic infant.

Symptoms

- Absence of the skull and/or brain
- Facial feature abnormalities
- Heart defects³¹

Advantages – using herbal medicine

- **Reduced risk of side effects:** Most herbal medicines are well tolerated by the patient, with fewer unintended consequences than pharmaceutical drugs. Herbs typically have fewer side effects than traditional medicine and may be safer to use over time.
- **Effectives with chronic conditions:** Herbal medicines tend to be more effective for long-standing health complaints that don't respond well to traditional medicine. One example is the herbs and alternative remedies used to treat arthritis. Vioxx, a well-known prescription drug used to treat arthritis, was recalled due to increased risk of cardiovascular complications. Alternative treatments for arthritis, on the other hand, have few side effects. Such treatments include dietary changes like adding simple herbs, eliminating vegetables from the nightshade family and reducing white sugar consumption.
- **Lower cost:** Another advantage to herbal medicine is cost. Herbs cost much less than prescription medications. Research, testing and marketing add considerably to the cost of prescription medicines. Herbs tend to be inexpensive compared to drugs.

Widespread availability: Yet another advantage of herbal medicines is their availability. In some remote parts of the world, herbs may be the only treatment available to the majority of people.³² In the table 1 the list of abortifacient plants is discussed and their usage without chemical has no side effects.

Table 1: List of abortifacient plants

Botanical name/ family	Local Name	Parts used	Method of Use
<i>Acacia catechu</i> (L.f.) Willd. (Fabaceae)	Karingali	Bark	3-5 ml of bark juice is taken orally for the first three months.
<i>Ananas comosus</i> (L.) Merr. (Bromeliaceae)	Kannara	Fruit	Ripened fruit is used to induce abortion.
<i>Annona reticulata</i> L. (Annonaceae)	Seetha pazham	Seeds	Seed paste is given orally on empty stomach for 3-5 days.
<i>Caesalpinia pulcherrima</i> (L.) Sw. (Fabaceae)	Rajamally	Bark	Bark juice (2 ml) is administered orally on empty stomach for the first three months.
<i>Carica papaya</i> L. (Caricaceae)	Kappalam	Raw fruit	Raw fruit 10-15 ml of latex of raw fruit is given orally once a day for 3 days.
<i>Dolichos trilobus</i> L. (Fabaceae)	Kattumuthir	Whole plant	Whole plant juice is used to induce abortion in the first three months.
<i>Momordica charantia</i> L. (Cucurbitaceae)	Pavakka	Raw fruit	Fruit juice is given orally twice a day for 5 days on the first three month.
<i>Plumbago zeylanica</i> L. (Plumbaginaceae)	Koduveli	Root	3-5 ml of root paste is taken orally to induce abortion.
<i>Rhynchosia rufescens</i> (Willd.) DC. (Fabaceae)	Ramachempu	Leaf	Leaf decoction is administered for abortion for the first three.
<i>Solanum torvum</i> Sw. (Solanaceae)	Ana chunda	Leaf	3-5 ml Leaf extract is given orally for 5days.
<i>Abrus precatorius</i> (Fabaceae)	Kunch	Seed	Fresh seed powder mixed with glass of like warm water at early morning in empty stomach.
<i>Achyranthus aspera</i> linn (Amaranthaceae)	Apang	Fresh root	Fresh root is made into paste; it is mixed with luke warm water and given after 3 hours.
<i>Aerva lanata</i> linn (Amaranthaceae)	Chaya	Fresh root	Fresh root is used as a stick for inducing abortion; it is useful for terminating pregnancy up to 4 months.
<i>Alternanthera philoxeroides</i> (Amaranthaceae)	Jalsachi ara	Fresh plant	A piece of whole plant is used as a stick and it is used to induce abortion.
<i>Curculigo orchoides</i> Gaertn (Hypoxidaceae)	Nilappana	Tuber	Past of the tuber is given orally in empty stomach.
<i>Annona reticulata</i> Linn (Annonaceae)	Nona	Seeds	3 gm of this seed powder is mixed with powder of black pepper seeds in equal amount and it is given.
<i>Ananas cosmosus</i> Linn (Bromeliacea)	Anaras	Leaves	10 g of leaves made into paste with 7 black pepper seeds and it is used.
<i>Aristolochia indica</i> Linn (Aristolochiaceae)	Iswarmul	Root	Fresh root is used as an abortifacient.
<i>Avicennia marina</i> (Avicenniaceae)	Peyara ban	Leaf	Leaf extract is mixed with Glass of luke warm goat milk and sugar is added and it is used.
<i>Caesalpinia pulcherrima</i> (Caesalpinaceae)	Krishna chura	Leaf	Dried leaf infusion about 1 cupful is given in early morning in empty stomach to induce abortion.
<i>Dendrophthoe falcate</i> Linn (Iorantheaceae)	Baramanda	Stem	Fresh stem of about 20g, along with 11 black pepper seeds about 10 g and <i>Plumbago indica</i> are crushed to paste. This paste is given in early morning in empty stomach.

Botanical name/ family	Local Name	Parts used	Method of Use
<i>Gloriosa superba</i> Linn (Liliaceae)	Ulat chandal	Roots	Fresh roots of about 20g are made into a paste along with 7 black pepper seeds. The paste is mixed with glass of Luke warm goat milk at the bed time.
<i>Hibiscus rosa sinensis</i> Linn (Malvaceae)	Jaba	Root bark	Inner portion of the root bark 100 g is made into paste along with seeds of black pepper. This paste is mixed with a glass of water and given as abortifacient.
<i>Menya spinosa</i> Roxb (Rubiaceae)	Menya	Fruit and seeds	Fruit and seeds are made into a paste with 2-3 bulb of <i>Alliumsativum</i> Linn. The whole plant is made in to a pill to keep it inside for overnight to induce abortion.
<i>Plumbago rosea</i> Linn (plumbaginaceae)	Lal cheetah	Root	A candle of about 9 cm is prepared from the root paste of this plant, which is kept inside overnight to induce abortion.
<i>Plumbago zeylanica</i> Linn (plumbaginaceae)	Chita	Root	Fresh root of about 9 cm long is used to induce abortion.
<i>Semecarpus anacardium</i> Linn (Anacardiaceae)	Bhela	Root bark	The fresh root bark of about 20g is made into a paste. Two small pills are prepared from this paste and are kept inside overnight.
<i>Stephania japonica</i> (Mensispermaceae)	Ahnad ne muka	Root	Fresh root paste of about 30g is given to induce abortion.
<i>Uraria lagopodioides</i> (Fabaceae)	Chakulia	Plant	Whole plant paste of about 30g is made into a candle which is kept inside to induce abortion. ³⁴

CONCLUSION

In India abortion is the major issue; in this article we have discussed elaborately about the need and proper way of abortion. Abortion is done by two techniques, one is allopathic/instruments used techniques, second is by using the abortifacient plants. These medical techniques have more side effects and they are cost effective, painful but herbal abortifacient plants are natural, low cost, less side effects and less pain caused to the body. Although the allopathic/instruments used techniques are effective and fast acting but highly risk associated methods, so there is a need of searching newer techniques from these plants, these plants also have better compatibility with the human body. So that we have selected nearly 30 medicinal plants and discussed elaborately regarding the topic. Nowadays government funding agencies are ready to insisting to do the research work under the plants.

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