



Scholars Research Library

J. Nat. Prod. Plant Resour., 2011, 1 (4):5-12
(<http://scholarsresearchlibrary.com/archive.html>)



Rising Trends towards Herbal Contraceptives

Rajandeep Kaur*, Anil Sharma, Ravinder Kumar and Rajeev Kharb

CT Institute of Pharmaceutical Sciences Jalandhar, India

ABSTRACT

Population explosion is leading cause of poverty and pollution in developing countries. There are several medicinal plants associated with antifertility properties. Fertility regulation with plants or plant preparations has been reported in the ancient literature of indigenous systems of medicine. A large number of plant species with anti-fertility effects have been screened in China and India beginning about 50 years ago and were subsequently fortified by national and international agencies. Herbal contraceptives are a category of herbs that have an anti-fertility effect. There are many different ways in which herbs can impair fertility.

INTRODUCTION

Over population is one of the serious problems in the developing countries like India and that would be increased about 9.2 billion by the year 2050.[1] The census of 2005 showed that the growth rate of population in India during the previous ten years was about 1.5% . In each year around 18 million people are adding to our total population. This increment imposes an extra burden on the community and it is also one of the leading causes of poverty and pollution in developing countries. For this purpose, the World Health Organization (WHO) has constituted a population control programme, which includes studies having traditional medical practices. From the advancement of reproductive biomedicine, several hormonal contraceptive pills have been developed but no one is free from different side effects. At present global attempt has been taken to search out the effect of herbal product for contraceptive purposes. [2] Few herbal contraceptives have been developed but the potentiality of these contraceptives is very minimal and the mode of action is beyond of our knowledge, till now. Epidemiological studies indicate that combined oral contraceptives increase risks of cerebral thrombosis [3], increase serum level of triglyceride, HDL and cholesterol and increase family mortality due to cardiovascular diseases

as well as malignant tumors in any organs, poor glucose tolerance or diabetes, nausea, abdominal pain, headache, obesity and menstrual changes.[4-6]

Population explosion is leading cause of poverty and pollution in developing countries. Rising human population throughout the world more particularly in developing and underdeveloped countries has detrimental effects on the life supporting system on earth. The possibility of an effective check on human fertility may soon be realized through biological means. Several potential approaches for induction of infertility have been investigated over a long period including hormonal chemical and immunological approaches. [7]

Since ancient times, mankind has used plants to cure diseases and relieve physical sufferings. Because of better cultural acceptability, better compatibility with the human body, lesser side effects and effectiveness of many traditional medicines is now an accepted fact. More than 35,000 plant species are being used in various human cultures around the world for medicinal purposes. Nearly 80% of the world populations rely on traditional medicines for primary health care, most of which involve the use of plant extracts. [8,9]

Medicinal plants products have a long history of indigenous use in India as well as other countries. Phytotherapy has a very long tradition, although proper scientific explanation is relatively new. In our country as well as in the world, there are several medicinal plants associated with antifertility properties.[10] Although very few contraceptives have been developed from plant extracts, their potentiality has not been determined accurately, and their mode of action has been beyond our knowledge until now because there are many problems in assessing plant extract including batch to batch variation and a lack of definite active portion of the extract used for the development of herbal contraceptives. Fertility regulation with plants or plant preparations has been reported in the ancient literature of indigenous systems of medicine. A large number of plant species with anti-fertility effects have been screened in China and India beginning about 50 years ago and were subsequently fortified by national and international agencies.

The status of herbal medicine has been fast growing all over the world during the last few decades. The World Health Organization (WHO) has set up a Task Force on Plant Research for fertility regulation with an objective to find new orally active non-steroidal contraceptive compounds. In India, phytotherapy has a very long tradition, although proper scientific explanation is relatively new. In our country as well as in the world, there are several medicinal plants associated with antifertility properties. Although very few contraceptives have been developed from plant extracts, their potentiality has not been determined accurately, and their mode of action has been beyond our knowledge until now because there are many problems in assessing plant extract including batch to batch variation and a lack of definite active portion of the extract used for the development of herbal contraceptives. Fertility regulation with plants or plant preparations has been reported in the ancient literature of indigenous systems of medicine. A large number of plant species with anti-fertility effects have been screened in China and India beginning about 50 years ago and were subsequently fortified by national and international agencies.[11] However, the search for an orally active, safe and effective plant preparation or its

compound is yet to be needed for fertility regulation due to incomplete inhibition of fertility or side effects.

Herbal contraceptives offer alternatives for women who have problems with or lack access to modern contraceptive options particularly women living in the rural areas in developing nations with very high population like India, China, Africa (Nigeria) and Bangladesh. Studying the potency and toxicity of local plants that are reputed for birth control in the folkloric medicine of these countries may generate greater confidence in and wider acceptance of herbal contraceptives. However, the search for an orally active, safe and effective plant preparation or its compound is yet to be needed for fertility regulation due to incomplete inhibition of fertility or side effects.[12]

Numerous herbs have been used historically to reduce fertility, and modern scientific research has confirmed anti-fertility effects in at least some of the herbs tested. Herbal contraception may never reach the level of contraceptive protection as the pill, but it offers alternatives for women who have difficulty with modern contraceptive options or who just want to try a different way. Very little is known about many of the herbs, or about long term side effects or safety concerns. [13] Herbal contraceptives are a category of herbs that have an anti-fertility effect. There are many different ways in which herbs can impair fertility. Some herbs may affect the ovary, while others act upon the uterus, affect normal hormone production or block certain hormones. For several of these we don't really understand their action or how they got their reputation. Some herbs have the ability to interfere with implantation; these herbs can be taken on as needed basis, and are useful as an emergency contraceptive. There are also some herbs that have been found to interfere with normal sperm production, or mobility. Each herb is used in its own way, so it's important to have some idea of how they are used, or could be used.

For centuries herbal preparations have been connected with the goal of preventing, and or disrupting pregnancy. It is impossible for us to say how effective they were as much of the information remains scarce and fragmented, most recipes are very old and were transmitted orally and information was closely guarded to avoid persecution during the burning times. Some historical information remains unresolved to this day. However, exact recipes are rare, and effectiveness rates are untested in our modern society. Scientific researchers have done some research on botanical anti-fertility agents; some findings have been very interesting and promising. Unfortunately, there is not a lot of money to be made from herbal drugs unless botanical compounds can be extracted, refined, patented and proven safe, so pharmaceutical companies can make a profit from marketing the discovery to the general public. China and India are two countries that have done quite a bit of research on herbal contraceptives. Thus an attempt has been made to review plants which have been used as herbal contraceptives.

Sr. No.	Plant Name	Family	Part used	Mechanism of action
1.	<i>Abrus precatorius</i>	Fabaceae	Seed	Antiimplantation activity[14]
2.	<i>Acalypha indica</i>	Euphorbiaceae	Whole plant	Antiimplantation activity
3.	<i>Acanthus montanus</i>	Acantahceae	Root	Antifertility, Fetotoxic activity[15]
4.	<i>Achyranthes aspera</i>	Amaranthaceae	Leaf, Root	Antiovolatory activity[16]
5.	<i>Adhatoda vasica</i>	Acantahceae	Leaves	Atiimplantation activity
6.	<i>Aegele marmelos</i>	Rutaceae	Leaves	Spermicidal activity[17]
7.	<i>Ailanthus exelsa</i>	Simaroubaceae	Stem	Atiimplantation activity[18]
8.	<i>Allamanda cathartica</i>	Apocynaceae	Leaves	Antifertility activity[19]
9.	<i>Alangium salvifolium</i>	Alangiaceae	Stem	-----
10.	<i>Albizia lebbbeck</i>	Fabaceae	Pods	Antispermatogetic activity[20]
11.	<i>Allium cepa</i>	Liliaceae	Bulbs	-----
12.	<i>Asparagus africanus</i>	Asparagaceae	Leaves, roots	Atiimplantation activity[21]
13.	<i>Aspilia Africana</i>	Compositae	Leaves	Oestrogenic activity[22]
14.	<i>Azadirachta indica</i>	Meliaceae	Seeds, Bark, Leaves	Spermicidal activity
15.	<i>Barleria prionitis</i>	Acanthaceae	Root	Antispermatogetic activity[23]
16.	<i>Calliandra angustifolia</i>	Mimossaeae	Root, Bark	-----
17.	<i>Cananga odorata</i>	Annonaceae	Root	Spermicidal activity[24]
18.	<i>Cassia fistula</i>	Fabaceae	Seeds	Antifertility, Antiovolatory activity[25]
19.	<i>Cassia occidentalis</i>	Fabaceae	Root	Antispermatogetic activity
20.	<i>Centella asiatica</i>	Mackinalayaceae	Leaves	-----[26]
21.	<i>Cissampelos pareira</i>	Menispermaceae	Leaves	Antifertility activity[27]
22.	<i>Citrullus colocynthis</i>	Cucurbitaceae	Fruit	Antispermatogetic activity[28]
23.	<i>Clerodendrum serratum</i>	Verbenaceae	Whole Plant	Spermicidal activity
24.	<i>Colebrookia oppositifolia</i>	Lamaceae	Leaf	Spermicidal activity[29]
25.	<i>Crotalaria juncea</i>	Fabaceae	Seeds	Antispermatogetic activity[30]
26.	<i>Daucus carota</i>	Apiaceae	Seeds	-----
27.	<i>Dendrophthoe falcata</i>	Loranthaceae	Leaves, Stem	Atiimplantation activity[31]
28.	<i>Dysoxylum binectariferum</i>	Meliaceae	Stem, Bark	Uterotropic activity[32]
29.	<i>Hibiscus rosa sinensis</i>	Malvaceae	Roots, Leaves	Uterotropic activity[33]
30.	<i>Hydrocotyle javanica</i>	Apiaceae	Whole plant	Spermicidal activity
31.	<i>Juniperus phoenicea</i>	Cupressaceae	Fruit	Spermicidal activity[34]
32.	<i>Lepidagathis longifolia</i>	Verbenaceae	Roots	-----
33.	<i>Melia azedarach</i>	Meliaceae	Seed	Antifertility activity
34.	<i>Mondia whitei</i>	Apocynaceae	Root	Antispermatogetic activity[35]
35.	<i>Phyllanthus amarus</i>	Euphorbiaceae	Whole plant	-----[36]
36.	<i>Piper longum</i>	Piperaceae	Fruit	Antifertility activity[37]
37.	<i>Plumbago rosea</i>	Plumbaginaceae	Leaves, Roots	Uterotonic, Fetotoxic activity[38]
38.	<i>Plumbago zeylanica</i>	Plumbaginaceae	Leaves	Antifertility activity[39]
39.	<i>Quassia amara</i>	Simaraubaceae	Stem	Spermicidal, Antifertility activity[40]
40.	<i>Riccinus communis</i>	Euphorbiaceae	Seeds	Antifertility activity[41]
41.	<i>Rumex steudelii</i>	Polygonaceae	Root	Anti estrogen, uterotonic activity[42]
42.	<i>Salvia fruticosa</i>	Labiataeae	Leaves	Atiimplantation activity[43]
43.	<i>Sarcostema acidum</i>	Asclepiadaceae	Stem	Spermicidal activity[44]
44.	<i>Spondias mombin</i>	Anacardiaceae	Leaves	Antifertility activity[45]
45.	<i>Terminalia chebula</i>	Combretaceae	Fruit	Spermicidal activity[46]
46.	<i>Tinospora cordifolia</i>	Menispermaceae	Stem	Spermicidal activity[47]
47.	<i>Woodfordia fruticosa</i>	Lythraceae	Flowers	Atiimplantation activity[48]
48.	<i>Wrightia tinctoria</i>	Apocynaceae	Stem	Atiimplantation activity[49]

CONCLUSION

Despite the availability of various contraceptives modalities, one of the most challenging pursuits in the realm of pharmaceutical and medical sciences is the search for newer, most potent, additionally safe and less expensive methods that require infrequent and self administration and should have long lasting but complete antifertility effect. Efforts are being

made to explore the hidden wealth of medicinal plants for contraceptive use. Herbal medicine should be the one of the common forms of therapy available to much of worlds population having antifertility properties.

Plants with antifertility property:



Adhatoda vasica



Allamanda cathartica



Asparagus africanus



Barleria prionitis



Cananga odorata



Centella asiatica



Citrullus colocynthis



Dendrophthoe falcate



Juniperus phoenicea



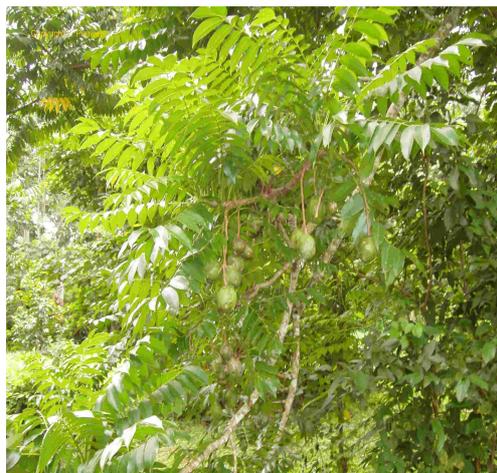
Plumbago zeylanica



Quassia amara



Rumex steudelii

*Sarcostema acidum**Spondias mombin**Woodfordia fruticosa**Wrightia tinctoria*

REFERENCES

- [1] United nations World population prospects. The 2006 Revision. Executive summary, department of economic and social affairs population division. New York. **2007**,1-21.
- [2] K Chakrabarty ; S Pal; A.K. Bhattacharya. *Asian Journal of Andrology*, **2003**, 5, 131-5.
- [3] O Lideguard; S Kreiner. *Contraception*, **2002**, 65, 197-205.
- [4] VS Kasture; CT Chopde; VK Deshmukh. *Journal of Ethnopharmacology*, **2000**, 71, 65-75.
- [5] G Lacobellis. *Cardiovascular Drug therapy*, **2004**, 18, 239-40.
- [6] S Sanersak; C Korsakul. *J. Med. Assoc. Thai.*, **2006**, 89, 741-47.
- [7] RS Gupta; R Sharma. *Natural Product Radiance*, **2006**, 5 (5), 389-10.
- [8] A Lewington . Medicinal plants and plant extracts: A review of their importation into Europe. Cambridge, UK; Traffic International.
- [9] B Sandhya; S Thomas; W Isabel. *African Journal of Traditional Complemetary & Alternate Medicine*, **2006**, 3 (1), 101-14.
- [10] SP Hiremath; K Rudresh; S Badani. *Journal of Ethnopharmacology*, **1999**, 67(3), 253-8.

- [11] A Sivaraj; K Devi; K Sathiyaraj. *International Journal of Pharmaceutical Technology Research*, **2010**, 2(1), 588-91.
- [12] A Samuel; G Ukpo. *African Journal of Biotechnology*, **2009**, 8 (21), 5979-5984.
- [13] V Ravichandran; B Suresh; N Subramanian. *International Journal Pharmaceutical Sciences*, **1998**, 1-21.
- [14] I Okoko; A Osinubi; C Noronha. *Endocrinology Practice*, **2010**, 16, (4), 554-60.
- [15] EA Asongalum; P Nana; HS Foyet. *Methods findings in Experimental Clinical Pharmacology*, **2008**, 30(7), 521-28.
- [16] W Shibeshi; E Makonnen; L Zerihun; A Debella. *African Health Sciences*, **2006**, 6(2), 108-12.
- [17] A Chauhan; M Agarwal. *Systems Biology in Reproductive Medicine*, **2008**, 54(6), 240-6.
- [18] V Ravichandran; B Suresh; K Elango. *Journal of Ethnopharmacology*, **2007**, 112(1), 189-91.
- [19] A Singh; SK Singh. *Andrologia*, **2008**, 40(6), 337-45.
- [20] RS Gupta; R Chaudhary. *Asian Journal of Andrology*, **2004**, 6(2), 155-9.
- [21] G Tafesse; Y Mekonnen. *African Health Science*, **2006**, 6(2), 81-5.
- [22] TO Oyesola; CS Okoye. *Pakistan Journal Biological Sciences*, **2010**, 13(3), 126-31.
- [23] RS Gupta; P Kumar; VP Dixit. *Journal Ethnopharmacology*, **2000**, 70,(2), 111-7.
- [24] A Pankaj; I Madambath. *Fertility & Sterility*, **2009**, 91, 2243-6.
- [25] R Yadav; GC Jain. *Advances in Contraception*, **1999**, 15(4), 293-301.
- [26] I Yuniyanto; S Das; M Mat Noor. *Clinical Therapeutics*, **2010**, 161(3), 235-9.
- [27] M Ganguly; N Devi; R Mahanta. *Journal of Ethnopharmacology*, **2007**, 111(3), 688-91.
- [28] M Chaturvedi; PC Mali; AS Ansari. *Pharmacology*, **2003**, 68(1), 38-48.
- [29] RS Gupta; RK Yadav; VP Dixit. *Fitotrepia*, **2001**, 72(3), 236-45.
- [30] V Kumar; SB Patil; I Sangamma. *Asian Journal of Andrology*, **2004**, 6(1), 67-70.
- [31] RS Gupta; JB Kachhawa. *Journal of Herbal Pharmacotherapy*, **2007**, 7(2), 1-13.
- [32] G Keshri; RM Oberai; V Lakshmi; K Pandey. *Contraception*, **2007**, 76(5), 400-7.
- [33] M Nivsarkar; M Patel; C Bapu. *Contraception*, **2005**, 71(3), 227-30.
- [34] MS Shomaf; F Al Quadan. *Journal of Herbal Pharmacotherapy*, **2007**, 7(3-4), 179-89.
- [35] S Sokeng; JL Essame; N Koueta. *Phytotherapy Research*, **2001**, 15(1), 26-9.
- [36] MV Rao; KM Alice. *Phytotherapy Research*, **2001**, 15(3), 265-7.
- [37] V Lakshmi; R Kumar; JD Dhar. *Natural Product Research*, **2006**, 20(3), 235-9.
- [38] M Abdul; NA Abdullah; MA Khan. *Pakistan Journal Biological Sciences*, **2007**, 10(5), 763-7.
- [39] S Edwin; SB Joshi; DC Jain. *European Journal of Contraception & Reproductive Health Care*, **2009**, 14(3), 233-9.
- [40] Y Raji; AF Bolarinwa. *Life Science*, **1997**, 61(11), 1067-74.
- [41] X Zhang; F Han; P Gao; D Yu. *Natural Product Research*, **2007**, 11, 982-9.
- [42] E Gebrie; E Makonnen; A Debella. *Journal of African Health Sciences*, **2005**, 5(2), 119-25.
- [43] A Alkofahi; H Bataineh; A Elbeticha. *Journal of Ethnopharmacology*, **1998**, 61(1), 67-74.
- [44] A Sharma; A Mathur; P Sharma. *Asian Journal of Andrology*, **2002**, 4 (1), 43-7.
- [45] T Isek. *Journal of African Health Sciences*, **2008**, 8(3), 163-7.
- [46] A Srivastava; A Chandra; F Jamal. *Reproductive Toxicology*, **2010**, 29(2), 214-24.
- [47] R.S.Gupta, A.Sharma. *Indian Journal of Experimental Biology*, **2003**, 41(8), 885-9.
- [48] G Kehri; S Kumar. *Contraception*, **2008**, 78(3), 266-70.