RESEARCH PAPER | Biochemistry | Volume : 5 | Issue : 8 | August 2015 | ISSN - 2249-555X

Phytochemical Screening of Selected Anti-Infertility Indian Medicinal Plants

KEYWORDS: Anti-infertility, Phytochemicals, Medicinal plants, Fertility

S. A. MEENAKSHI
Department of Biochemistry, S.R.College, Trichirapalli. Tamil Nadu, South India

S. KALAVATHY
Department of Botany, Bishop Heber College, Trichirapalli. Tamil Nadu, South India

ABSTRACT *In developing countries, a variety of plants are claimed to have fertility regulating properties and a few have been tested for such effect. These medicinal plants are being used to treat several diseases. The present study deals that the phytochemicals in plant which shows fertility activity. With the help of available literature, we have analyzed that which phytochemical screening is more among selected medicinal plants. The phytochemical screening of the selected anti-infertility plants are Mucuna pruriens seed, Peper nigrum seed, Murraya koenigii leaf, Saraca asoca bark, Lanthiram bark, Nigella sativa seed and Aloe vera gel. The phytochemical screening of Mucuna pruriens seed, Peper nigrum seed, Murraya koenigii leaf,Saraca asoca bark, Lanthiram bark, Nigella sativa seed and Aloe vera gel showed that the presence of steroids, flavonoids, polyphenol, tannin, saponins, glycosides, terpenoids and anthroquinones while alkaloid was absent in Aloe vera. Amino acids were absent in all the plants except Mucuna pruriens. This type of collection may helpful to the pharmacists to concentrate the study on less expressed pharmacological activities*

INTRODUCTION

Infertility is the inability to naturally conceive a child or to carry a pregnancy to full term. There are many reasons why a couple may not be able to conceive, or may not be able to conceive without medical assistance. Common believes that it is easy to have a child and is often surprised when the woman does not fall pregnant as soon as they start trying for a baby. The chance of getting pregnant in each menstrual cycle (each month) is very high. However, it may take a long time to conceive, even if everything is looks normal, because some may just be a bit weak. Eight out of every ten women trying for a baby will fall pregnant within the first six months. Women who do become pregnant without any medical assistance generally do so within 8 months of trying [1].

Female infertility accounts for 35-40 % of overall infertility. Treatment depends upon the specific identifiable cause. In developing countries, 80% of the population continues to use medicinal plants and plant products in handling primary medical problems due to their accessibility, availability and affordability. In these countries, a variety of plants are claimed to have fertility regulating properties and a few have been tested for such effect [2-5]. Plant and plant products are an important part of the human diet and a major source of biologically active substances such as vitamins, dietary fiber, antioxidants, and cholesterol-lowering compounds [6].

Recently, it is clearly known that they have roles in the protection of human health, when their dietary intake is significant. More than 4,000 phytochemicals have been cataloged and are classified by protective function, physical characteristics and chemical characteristics [7]. Plant-derived substances have recently become of great interest owing to their versatile applications. Medicinal plants are the richest bio-resource of drugs of traditional systems of medicine, modern medicines, nutraceuticals, food supplements, folk medicines, pharmaceutical intermediates and chemical entities for synthetic drugs. Medicinal plants play a vital role in preventing various diseases. The antidiuretic, anti-inflammatory, antianalgesic, anticancer, anti-viral, anti-malarial, anti-bacterial, and anti-fungal activities of the medicinal plants are due to the presence of secondary metabolites [8]. Some preliminary tests to be screened before preparation of drug. If it works then the drug may enter in the market. Hence, the present study has been made to investigate the phytochemical screening of the selected (*Mucuna pruriens* seed, *Peper nigrum* seed, *Murraya koenigii* leaf, *Saraca asoca* bark, *Lanthiram* bark, *Nigella sativa* seed and *Aloe vera* gel) anti-infertility plants.

MATERIALS AND METHODS

Phytochemical screening

Plant materials: The fully mature *Mucuna pruriens* seed, *Peper nigrum* seed, *Murraya koenigii* leaf, *Saraca asoca* bark, *Lanthiram* bark, *Nigella sativa* seed and *Aloe vera* gel were collected in January 2015 from Tiruchirrappali, Tamil Nadu, India.

Preparation of alcoholic extract: The *Mucuna pruriens* seed, *Peper nigrum* seed, *Murraya koenigii* leaf, *Saraca asoca* bark, *Lanthiram* bark, *Nigella sativa* seed and *Aloe vera* gel were first washed well and dust was removed. The leaves, seeds, bark and gel were dried at room temperature and coarsely powdered using pestle and mortar. The powder was extracted with 70% methanol for 48 hours. A semi solid extract was obtained after complete elimination of alcohol under reduced pressure. The extract was stored in refrigerator until used. Chemical tests were carried out on the alcoholic extract and on the powdered specimens using standard procedures to identify the constituents as described by Sofowara [9], Trease and Evans [10] and Harborne [11].

RESULTS AND DISCUSSION

Plants synthesize an array of chemical compounds that are not involved in their primary metabolism. These 'secondary compounds' instead serve a variety of ecological functions, ultimately to enhance the plants survival during stress. In addition these compounds may be responsible for the beneficial effects of fruits and vegetables on an array of health related measures. Medicinal plants are assumes greater importance in the primary health care of individuals

Volume : 5 | Issue : 8 | August 2015 | ISSN - 2249-555X

and communities in many developing countries. There has been an increase of demand in international trade because of very effective, cheaply available, supposedly have no side effects and used as alternative to allopathic medicines [12].

The phytochemical characters of the *Mucuna pruriens* seed, *Peper nigrum* seed, *Murraya koenigii* leaf, *Saraca asoca* bark, *Lanthiram* bark, *Aloe vera* gel and *Nigella sativa* seed investigated and summarized in Table-1. The phytochemical screening of *Mucuna pruriens* seed, *Peper nigrum* seed, *Murraya koenigii* leaf,*Saraca asoca* bark, *Lanthiram* bark, *Nigella sativa* seed and *Aloe vera* gel showed that the presence of steroids, flavonoids, polyphenol,tannin, saponins, glycosides, terpenoids and anthroquinones while alkaloid was absent in *Aloe vera*. Amino acids were absent in all the plants except *Mucuna pruriens*.

Herbs have been used since the beginning of time to aid in many different ailments. Of these ailments, fertility has been enhanced and even corrected by the use of certain herbs [13].The use of different plant parts in recipes is of common occurrence in ethnobotanical studies. Sometimes leaves may be used as in *Acanthospermum hispidum* DC, *Nicotiana tabacum* L. [14], and *Senna alata*(L.) Roxb (Babalola, 2009), other times, roots may be more important as in *Vernonia amygdalina* Del. [16, 17] and *Baphia nitida*Lodd [16]. In others, recipe fruits arecommon as in *Citrullus colocynthis* (L.) Schrad [18]. In this study, the leaves and roots are the most used parts, which agree with previous ethnobotanical studies that have been carried out on plants used in the management of fertility [16].Hence, the phytochemical evaluation of the leaves of *A. esculentus* confirmed the absence of alkaloids, anthraquinones and cardenolides and the presence of cardiac glycosides, flavonoids, phenolics, saponins and tannins in high concentrations. However, phytochemical evaluation of the roots of the same plants showed the presence of flavonoids in high concentrations, while phenolics and saponins were present in lower concentrations. Alkaloids, anthraquinones, cardenolides, cardiac glycosides, and tannins were absent. Similar phytochemicals were observed in *Mucuna pruriens* seed, *Murraya koenigii* leaf, *Saraca asoca* bark and *Lanthiram* bark.

There are some indications of the possibility of use of the leaves of *A. esculentus* in the therapy of heart conditions and as anti-oxidants, antiseptics, anti-cancer, and laxatives as revealed by the class of natural products present in the plant. The roots of the plant is rich in flavonoids, this suggests the suitability of the plant as useful anti-oxidants since this class of natural products are noted for their free radical scavenging properties. The mechanisms behind its use for fertility enhancement could therefore bedue to reduction of stress on the reproductive cells. These however require further research. In summary, Among the seven plants, *Mucuna pruriens* seed, *Murraya koenigii* leaf, *Saraca asoca* bark and *Lanthiram* bark possess potential fertility promoting compounds present in it. Plants documented in this survey are recommended for further biological investigation to establish the claim of their fertility regulating properties. If the plants are administered in very minute quantities, they enhance pregnancy.

Acknowledgement
Authors are thankful to Director, Harman Institute of Science Education and Research, Thanjavur for his assistance.

Table 1 shows the phytochemical screening of *Mucuna pruriens* seed, *Peper nigrum* seed, *Murraya koenigii* leaf,*Saraca asoca* bark, *Lanthiram* bark, *Nigella sativa* seed and *Aloe vera* gel

S. No	Analysis	Mucuna pruriens	Peper nigrum	Murraya koenigii	Saraca asoca	Lanthiram pattail	Nigella sativa	Aloe vera
1.	Tannin	+	+	+	+	+	+	+
2.	Phlobatannins	-	-	+	++	++	-	+
3.	Saponin	+	+	+	+	++	+	++
4.	Flavonoids	+	+	+	+	+	+	+
5.	Steroids	++	++	++	++	++	++	+
6.	Terpenoids	++	+	++	++	++	++	++
7.	Triterpenoids	++	+	++	+	++	++	++
8.	Alkaloids	++	+	+	+	+	++	-
9.	Carbohydrate	+	+	++	+	++	+	++
10.	Amino Acids	++	-	-	-	-	-	-
11.	Anthro quinone	+	++	+	++	++	++	++
12.	Polyphenol	+	+	+	++	+	++	++
13.	Glycoside	++	+	+	+	++	++	++

(-) Absence; (+) Presence; (++) High concentrations

Volume : 5 | Issue : 8 | August 2015 | ISSN - 2249-555X

REFERENCE

[1]. Society for Assisted Reproductive Technology, American Fertility Society. Assisted reproductive technology in the United States and Canada: 1991 results from the Society for Assisted Reproductive Technology generated from the American Fertility Society registry. Fertil Steril 1991; 59, 956-962. | [2]. Baker VA, Hepburn PA, Kennedy SJ et al. (1999) Safety of phytosterol esters. Part 1. Assessment of oestrogenicity using a combination of in vivo and in vitro assays. Food Chem. Toxicol.,; 37: 13-22. 2. | [3]. Telefo PB, Moundipa PF, Tchouanguep FM. (2002) Oestrogenicity and effect on hepatic metabolism of the aqueous extract of the leaf mixture of Aloe buettneri, Diclipteraverticillata, Hibiscus macranthus and Justicia insularis. Fitoterapia,; 73; 472- 478. 3. | [4]. Ganguly M, Borthakur M, Devi N, Mahanta R. (2007) Antifertility activity of the methanolic leaf extract of Cissampelos pareira in female albino mice. J. Ethnopharmacol.,; 111: 688- 691. | [5]. Cherdshewasart W, Kitsamai Y, Malaivijitnond S. (2007) Evaluation of the estrogenic activity of the Wild Pueraria mirifica by vaginal cornification assay. J. Reprod. Dev.,; 53: 385- 393. | [6]. Krishnaiah D, Sarbatly R, Bono A (2007) Phytochemical antioxidants for health and medicine: A move towards nature. Biotechnol Mol Biol Rev 1: 97-104. | [7]. Savithramma N., M. Linga Rao and D. Suhrulatha. Screening of Medicinal Plants for Secondary Metabolites. Middle-East Journal of Scientific Research 8 (3): 579-584, 2011 | [8]. Abdul Wadood, Mehreen Ghufran, Syed Babar Jamal, Muhammad Naeem, Ajmal Khan, Rukhsana Ghaffar3 and Asnad. (2013) Phytochemical Analysis of Medicinal Plants Occurring in Local Area of Mardan Biochem Anal Biochem, 2:4 1-4 | [9]. Sofowara A (1993). Medicinal plants and Traditional medicine in Africa. Spectrum Books Ltd, Ibadan, Nigeria. p. 289. | [10]. Trease GE, Evans WC (1989). Pharmacognsy. 11th edn. Brailliar Tiridel Can. Macmillian publishers. | [11]. Harborne JB (1973). Phytochemical methods, London. Chapman and Hall, Ltd. pp. 49-188. | [12]. Handa SS, Khanuja SPS, Longo G, Rakesh DD. Extraction Technologies for Medicinal and Aromatic Plants. International centre for science and high technology, Trieste, 2008, 21-25. | [13]. Ramsey L (2000). Fertility enhancing herbs. Online publ. http://www.suite101.com/print_article.cfm/preconception/47212 | [14]. Emmanuel N, Claidette D (2007). Abortifacient plants of the Buea region their participation in the sexuality of aldolescent girls, Cameroon. Indian J. Trad. Knowledge 6:502–507. | [15]. Babalola KA (2009). An examination of the usage of herbal contraceptives and Abortifacients in Lagos state Nigeria. Ethnobotanical leaflets 13:140-146. | [16]. Kumar D, Kumar A, Prakash O (2012). Potential fertility regulating agents from plants. A comprehensive review. J. Ethnopharmacol. 140:1-32. | [17]. Lawal IO, Uzokwe NE, Igboanugo BI, Adio AF, Awosan EA, Nwogwugwu JO, Faloye B, Olatunji BP, Adesoga AA (2010). Ethno medicinal information on collation and identification of some medicinal plants in Research institutes of South-West Nigeria. Afr. J. Pharm. & Pharmacol. 1:1-7. | [18]. Chaturredi M, Dixit VP (1997). Antiferility effect of Citrullus colocynthisSchrad.In male albino rats. Ind. J. Environ. Sci. 2:89-92. |