EDITORIAL

Potentials for Use of Medicinal Plants in Female Reproductive Disorders – The Way Forward

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Introduction

In the past years, the use of traditional medicine has gained much recognition worldwide, although more engrained in some cultures than others. This form of medicine relies on the use of certain herbal plants (medicinal plants) and other remedies for beneficial biological effects[1]. In Africa and Asia there appears to be a high reliance on medicinal plants particularly by people of lower income and this has been attributed partly to the often unreachable cost of allopathic drugs, unavailability of modern health care facilities, and also the cultural acceptability of the traditional system[2]. At the same time, there are some fields of thought that appear to disregard or discountenance the importance and use of medicinal plants. Such thoughts may have arisen for several reasons including, the idea that medicinal plant use is mainly for low income earners, that the use of medicinal plants have little to offer, and that medicinal plants have no activity and act more like a placebo. Evidence from scientific research worldwide has however proven that medicinal plants have immense biological and health applicability. Some of the earliest drugs were first discovered from traditionally used plants prior to their availability as synthesized drugs[3]. Medicinal plants should therefore be accorded due consideration and support across different health and scientific disciplines.

The use of medicinal plants has found application in several diseases and health conditions and reproductive disorders are not left out. In the traditional system of medicine, plant preparations in the forms of macerations, tinctures, concoctions, or infusions are used for a wide range of diseases. The application of medicinal plants to female reproductive health issues is gaining interest, as reproductive disorders are considered an important public health and social problem[4]. In developing countries, particularly in sub–Saharan Africa, reproductive health disorders pose a major burden[5,6] and are considered the second most prevalent health care problem in Africa[7].

The starting point for use of plants often begins from traditional healers and natives of a particular culture. The plants utilized vary from culture to culture which is not surprising owing to the vast varieties of plants in existence and also to the varying localization of plants from one geographical region to another. Plants collected may include species with known biological activity on reproductive disorders for which active compound(s) have not been isolated. On collection of plants, phytochemists (natural product chemists) prepare the extracts from the plant materials, which are subjected to biological screening using pharmacologically relevant assays, and then proceed to the isolation and characterization of the active compound(s) through bioassay-guided fractionation. Medicinal plants have played an important role of providing new chemical entities through the years even so for female reproductive health issues[8]. Detailed ethnobotanical surveys have been reported for several native communities around the world and many traditionally-used plants or remedies have been identified. The knowledge and the correct use of these natural medicines has been acquired and improved over many generations. Documentation of traditional knowledge of medicinal plants is crucial, since it provides chemists and pharmacologists with starting points for "targeted" analysis, discovery of novel remedies, and natural drugs for the treatment of pregnancy and birth-related problems.

Some medicinal plants used in female reproductive health

Medicinal plants can be used for their beneficial effects on many female reproductive processes ranging from pregnancy, to labour induction, elimination of retained placenta, and management of post-partum haemorrhage. Most often the biological effects elicited

by these remedies are due to secondary metabolites (small chemicals, peptides or proteins) that primarily act on the reproductive system. The nature of these actions may involve the modulation of uterine contractions at labour, resulting in either the stimulation or inhibition of myometrial muscle contractions, or may modulate other reproductive processes such as folliculogenesis, and reproductive hormone(s) regulation.

Medicinal plants have found application in several female reproductive disorders. Ethnobotanical studies are additionally required to identify and document the native use of plants to treat gynaecological health issues[1]. Some studies provide initial pharmacological characterisation [9,10]. *Ficus exasperata* (Moraceae) for instance in Nigeria has been reported to elaborate constituents which are able to manage preterm labour and dysfunctional labour[11]. Preterm labour is currently the single largest cause of maternal and perinatal mortality in developed countries and a major contributor to childhood developmental problems[12,13]. Currently used intervention therapies to suppress uterine contractions and delay labour, have harmful side effects for mother and baby[14]. Thus, there is a need for treatments that are effective in reducing the premature birth and/or providing for longer gestation, with better safety and tolerability profiles. Uterotonic or oxytocic drugs are used to manage dysfunctional labour and new drugs for dysfunctional labour still remain largely unsearched. There is therefore evidently an increasing need to search for new chemical entities from medicinal plants which till date still remain largely untapped. *Emilia coccinea* (Asteraceae) and *Alchornea laxiflora* (Euphorbiaceae) also in Nigeria have shown usefulness as potent contraceptive agents [15,16]. In native Northern America, raspberry leaves are taken as tonics during pregnancy to prepare for labour, black haw is taken to prevent miscarriage and blue cohosh is taken to induce labour[17].

Preparations of black cohosh root (*Actaea racemosa* [Nutt.] L.), Goldenseal root (*Hydrastis canadensis* L.), and Chaste tree fruits (*Vitex agnus-castus* L.) are listed in the U. S. Pharmacopoeia and are available as dietary supplements to be used for premenstrual stress syndrome, as emmenagogue agents, and for gynaecological problems. Castor oil (*Ricinus communis* L.)[18] and cotton bark root (*Gossypium hirsutum* L.)[19] are utilized by midwives for applications during pregnancy and labour[20,21]. In Germany aerial parts of marjoram (*Origanum majorana* L.), lime (*Tilia cordata* Mill. and *Tilia platyphyllos* Scop.) as well as chamomile (*Matricaria recutita* L.), and fruits of caraway (*Carum carvi* L.) are used to induce labour[22].

There is a vast array of information available on traditionally used herbs to treat gynaecological problems. The medicinal properties and mode of action of many of these plants have not yet been studied in molecular detail but they may affect a number of different physiological targets and pathways in the female body.

Safety concerns with medicinal plants use

Regardless of the acceptability by many of the purported safety in use of herbal medicines, some of these medicines may have harmful side effects and when taken in large unregulated quantities may lead to the death of the unborn baby and/or uterine rupture, and other longer-term effects on the mother or baby. This necessitates detailed studies to identify the correct dosage that is safe to use, and hence significant caution must be applied on the arbitrary use of medicinal plant.

Importance of identification, documentation and preservation of medicinal plants

Another major concern however, is that traditional medicinal knowledge and its associated plants, may be lost if care is not taken to adequately document and preserve this knowledge and the plants of importance. This is particularly important since knowledge of most of these medicinal plants are simply handed down by word of mouth over successive generations[23]. There is also the issue of environmental degradation, deforestation, over–exploitation, over–grazing, agricultural land expansion, and acculturation which continue to threaten the existence of these medicinal plants[23]. The need therefore to investigate and document traditional knowledge of medicinal plants which will promote proper utilization of these medicinal plants is highly encouraged. This will also enhance the promotion and protection of indigenous medicinal plant knowledge of any community as a vital part of the nation's heritage.

The issue of secrecy and intellectual property rights amongst traditional medical care givers has made it difficult for them to disclose freely the actual medicinal plant, proportions and combinations used for treatment of specific diseases. This needs to be resolved for meaningful identification and documentation of medicinal plants used within communities.

Conclusion and Way Forward

In conclusion, medicinal plants are an essential component of drug discovery for female reproductive disorders. There is a great need for new, potent,

selective and nontoxic therapeutic agents (agonists and antagonists) that modulate the female reproductive system. Traditionally used herbal medicines and their active ingredients, are ideal starting points for biological target-oriented drug discovery efforts for gynaecological disorders. It is vital to incorporate this form of medicine to improve gender equity in basic health care provision and national development through indigenous knowledge innovations and bioprospecting.

A trusted regulatory body should be established to oversee all intellectual property rights of individuals with documented traditional herbal plants and their usage. Their rights and ownership of such formulation should be respected to curtail secrecy, and royalties should be paid to them when drugs are later developed from these plants.

Furthermore, documented plant species will assist in the conservation of such relevant plant species for female reproductive health issues and may lead to the isolation of useful ingredients to produce drugs and other medicinal consumables. Health care givers, scientists and policy makers are therefore enjoined to support research and documentation of medicinal plants use in reproductive disorders.

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