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Review

Medicinal plants for women's healthcare in southeast Asia: A meta-analysis of their traditional use, chemical constituents, and pharmacology

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ABSTRACT

Ethnopharmacological relevance: This is an extensive review of plants used traditionally for women's healthcare in Southeast Asia and surrounding countries. Medicinal plants have a significant role in women's healthcare in many rural areas of the world. Plants with numerous efficacious observations have historically been used as a starting point in the development of new drugs, and a large percentage of modern pharmaceuticals have been derived from medicinal plants.

Materials and methods: A review was conducted for all plant use mentioned specifically for female healthcare, such as medicine to increase fertility, induce menstruation or abortion, ease pregnancy and parturition, reduce menstrual bleeding and postpartum hemorrhage, alleviate menstrual, parturition and postpartum pain, increase or inhibit lactation, and treat mastitis and uterine prolapse, in 200 studies focusing on medicinal plant use, either general studies or studies focusing specifically on women's healthcare.

Results: Nearly 2000 different plant species are reported to be used in over 5000 combinations. Most common are *Achyranthes aspera*, *Artemisia vulgaris*, *Blumea balsamifera*, *Carica papaya*, *Curcuma longa*, *Hibiscus rosa-sinensis*, *Leonurus japonicus*, *Psidium guajava* and *Ricinus communis*, and each of these species had been reported in more than 10 different scientific articles.

Conclusions: This review provides a basis for traditional plant use in women's healthcare, and these species can be used as the starting point in the discovery of new drugs.

Contents

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1. Introduction

In Southeast Asia, despite the increasing availability of modern medicine, the use of traditional medicine remains popular as access to modern medicine is widespread but not available to all (Shein, 2001). People with low socioeconomic status are generally believed to rely more on traditional medicine because of inaccessibility and unavailability of health care services (Gaitonde and Kurup, 2005). In fact, all member countries of the Southeast Asian region, with assistance from WHO, are developing, strengthening and introducing the use of traditional medicine into primary health care (Shein, 2001; World Health Organization, 2004), as these are inexpensive and readily available compared to their pharmaceutical alternatives (Belew, 1999).

Herbal medicines, which include herbs, herbal preparations and herbal products, are the most widespread of traditional medicines (World Health Organization, 2008), and women their most frequent users (Murphy et al., 1999; Hall et al., 2011). Herbal medicines are used by women to treat a number of reproductive health problems, such as menstrual problems, infertility, discomforts and dysfunctions of pregnancy, labor and menopause (Beal, 1998). Women's reproductive health problems are mostly functional disorders (e.g. dysregulation of cyclical events, adjustment of physiological events to pregnancy, adjustments to cyclical events at perimenopause), rather than infectious or surgical emergencies for which most Western modern medicines have been developed. This could explain why problems in women's reproductive health may be more amenable to treatment with herbal medicines (Beal, 1998). Many pregnant women also consider herbs to be generally milder and safer than pharmaceutical drugs (Westfall, 2003a; Low Dog, 2009).

Modern research focusing on the use of plants often focuses on the realm of knowledge of male traditional healers, and scholars have missed the wealth of knowledge that is held by women (Pfeiffer and Butz, 2005). Erosion and deterioration of traditional medical knowledge can be observed in many cultures and leads not only to a loss in biocultural diversity, but also diversity in alternatives for primary healthcare and leads for drug discovery (Farnsworth et al., 1985). Documenting the use of plants by ethnic minorities is not only an important part in understanding and analyzing elements of traditional birth practices, but a way to perpetuate knowledge at risk of being lost.

This study provides a review of 200 selected studies that include plants used in Southeast Asia to treat women's health issues, including plants used to increase fertility, induce menstruation or abortion, ease pregnancy and parturition, reduce menstrual bleeding and postpartum hemorrhage, alleviate menstrual, parturition and postpartum pain, increase or inhibit lactation, and treat mastitis and uterine prolapse. Species cited in over 20 species-use reports are reviewed for chemical constituents, pharmacological studies and efficacy in an attempt to evaluate their traditional use in women's healthcare.

2. Materials and methods

2.1. Literature review

Women's health use was defined as any plant reported to be used to increase fertility, induce menstruation, abortion, and fetal or placental expulsion, ease pregnancy and parturition, reduce menstrual bleeding, vaginal discharges, and postpartum hemorrhage, alleviate menstrual, parturition and postpartum pain, increase or inhibit lactation, and treat mastitis, uterine prolapse and sexually transmitted diseases. Some of the terms used to describe ailments were ambiguous, and, therefore, have been excluded unless it was clear from the context that such use was implied, e.g. gonorrhea, which could affect either gender, but may be employed specifically for one only; abdominal pain, which may have been an euphemism for menstrual pain; or headache, in which the informant omitted to specify that its use was particularly important in conjunction with the menses. All available original research publications on medicinal plants, in general, as well as those mentioned for their specific use in women's health, from Southeast Asia and its surroundings, were reviewed from 1886 to 2012. A number of theses, books and articles from the library of the Kunming Institute of Botany were translated from Chinese for this paper (see references). Reference lists, ISI Web of Science and Google Scholar, were used to identify eligible studies on medicinal plants. Some studies were omitted due to limited data on women's health plant use. In addition, catalogs and compilations were reviewed, such as the Medicinal Plants of Southeast Asia (Perry and Metzger, 1980), De Nuttige van Planten van Nederlandsch-Indië (Heyne, 1913), A Dictionary of the Economic Products of the Malay Peninsula (Burkill, 1935), Les Plantes Medicinales du Cambodge, du Laos et du Vietnam (Petelot, 1952), and Plant Resources of South-east Asia (De Padua et al., 1999). Reviewing of general studies was limited to the Southeast Asia region, but included Northeastern India, Bangladesh, and the southern Chinese provinces of Guangxi, Guangdong, Guizhou, Hainan, Hunan, Sichuan and Yunnan. Studies focusing specifically on medicinal plants used for women's health are more scarce and were selected more broadly as species-reports from these studies are highly relevant, and geographically include Polynesia, Japan, Korea, and the other provinces of China and India, but excluding Australia. Some publications (e.g. Boorsma, 1897; De Clercq, 1927; Crevost and Petelot, 1929; Burkill and Haniff, 1930; Blackwood, 1935; Okabe, 1940; Cheo, 1947, 1949; Browne, 1955; Chung yao