# Ethnobotanical investigation of use of medicinal plants for obstetric and gynecological disorders in South Chungcheong Province

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## 1. Introduction

The role of medicinal plants, both historically and in the present, has been to reduce pain and other disease. In Korea, people have used medicinal plants from their surroundings since ancient times. Inhabitants of British Columbia (Canada) and Trinidad (West Indies) widely used medicinal plants for treating humans and livestock. The long history of use of ethnomedicinal plants corresponds to a large body of clinical experience.

South Chungcheong Province is located in the mid-western part of the Korean peninsula, and Mt. Gyeryong and Mt. Chilgap are located on the Charyung mountain chain, and have various flora. The present investigations were conducted on Mt. Gyeryong and Mt. Chilgap in Chungcheong province vegetation areas to identify ethnomedicinal plants and traditional knowledge associated with them.

## 2. Field Survey

### 2.1. Study area

The study area was South Chungcheong Province, located in the center of the Korean peninsula. South Chungcheong Province is characterized by a temperate monsoon climate with four distinct seasons. The topography is flat and level; South Chungcheong Province is the lowest area in the whole country, with no location exceeding 1000 meters above sea level. Mt. Gyeryong was formed by the process of the Geum river eroding the Charyung mountain range, and extends through Nonsan City, Gongju City, and Daejeon City, with a varied flora.14 Mt. Chilgap is situated in the center of Cheongyang County, i.e., from the north to the southwest side of the Charyung mountain range. Mt. Chilgap has rugged terrain, clear seasonal changes, and a varied flora.

### 2.2. Investigation method

A field survey was carried out in 16 villages in 5 cities and counties around the central areas of Mt. Gyeryong and Mt. Chilgap. Residents who were at least 50 years old were interviewed on the subject of folk medicinal plants. Interviewees ranged from 66 to 89 years old, and the average age was 79 years.

We used a semi-structured questionnaire for the interviews, which we developed to solicit information on articles of folklore. The questionnaire asked respondents to recording the following data: the common name of the plant(s); the name of the disease that the plant was used to treat; the part(s) of the plant used in treatment; the preparation, application, and administration period of the medicine; the time at which plants were collected; the method of storage; weather the interviewee had direct, personal experience with the plant; weather the plant was used in combination with other plants; any known side effects; weather the treatment was effective; explanation of the therapy used; and the respondent's gender, age, name, region of investigation.

### 2.3. Analysis of the data

Data reduction was carried out using Microsoft Excel program Ver. 2010. The informant consensus factor (ICF) was calculated using the following formula: ICF = Nur – Nt/Nur – 1,19 where Nur is the number of use-reports in each category of ailment, and Nt is the number of plants species used for a given ailment category, agreed for all informants. Fidelity level (FL) was calculated using the following formula: FL (%) = Np × 100/N,20 where Np is the number of informants that indicated use of the plant for a particular ailment, and N is the total number of informants that indicated the use of a given species for any ailment.

## 3. Results and discussion

The total number of interviewees was 58, 41 of whom were female; 868 folk remedies were investigated and recounted 618 of these were reported by female interviewees. The folk remedies included treatments for 80 obstetric and gynecological disorders. We included 71 of the 80 obstetric/gynecological folk remedies in our analysis; 9 remedies were excluded because of insufficient data.

### 3.1. Ailments and administration

In this survey, 10 types of gynecological disorders were investigated, most of which were related to pregnancy and childbirth. The disease distribution was characterized as follows: postpartum edema (38.0% of all cases); cold pattern (22.5%); perineum wound (12.7%); fluor genitalis (11.3%); induced abortion (4.2%); infertility, vaginal bleeding, and postpartum care (2.8%, each); genital pruritus (1.4%); and promotion of overall health (1.4%)

### 3.2. Medicinal plants recorded

Of the ethnomedicinal plants used to treat gynecological disorders, 12 families, 11 genera, and 17 species were utilized in 71 ways. The reported plant families included the following Asteraceae: A. princeps var. orientalis (Pampan.) Hara, C. zawadskii var. latilobum Kitamura, Cirsium japonicum var. ussuriense Kitamura, and Artemisia lavandulaefolia (DC.). Cucurbitaceae was represented by C. moschata Duchesne and Trichosanthes kirilowii Maxim. Ranunculoideae included Paeonia lactiflora var. hortensis Mak and Pulsatilla koreana Nakai. The other families consisted of Lamiaceae, Campanulaceae, Malvaceae, Pinaceae, Poaceae, Phytolaccaceae, Anacardiaceae, Plantaginaceae, and Olanaceae (1 species each). Similar results were shown for Rhus verniciflua Stokes, A. princeps var. orientalis (Pampan.) Hara, Althaea rosea cav., Adenophora triphylla var. japonica Hara, and C. moschata Duchesne as for treatment of gynecological diseases in the Chungbuk YuQuan area. It is also thought that there were similarities in use of Asteraceae, Crassulaceae, and Sapindaceae in California's Chumash region for women's health,26 and in the use of Asteraceae, Crassulaceae, and Sapindaceae in the Dominican Republic.

### 3.3. Parts of plants used and methods of preparation

Of the 10 parts of plants used for medicinal materials, roots were most frequent (29.6%), followed by aerial parts (28.2%), fruits (14.1%), stem bark (5.6%), roots with fruit (8.5%), flowers (4.2%), whole plant (4.2%), leaf (2.8%), stem (1.4%), and stem sap (1.4%). Other studies reported leaves, aerial parts, or roots as the most-commonly used components. The use of particular plant components may vary slightly depending on the characteristics of the plant species used, regional characteristics, and the disease in question.

### 3.4. Quantification of data

In the usage categories, the ethnomedicinal plants were most widely used for postpartum edema (27 use-reports, 4 species), cold pattern (16 use-reports, 4 species), perineum wound (9 use-reports, 3 species), fluor genitalis (8 use-reports, 2 species), and induced abortion (3 use-reports, 2 species). The gynecological disorders with the highest ICF values were infertility (1.0), postpartum edema (0.88), fluor genitalis (0.86), cold pattern (0.80), perineum wound (0.75), and induced abortion (0.50). A small number plants species reported by many interviewees for one disease indicated higher ICF values. On the contrary to this an equal number of interviewees and plant species or every species of plants used for one disease indicated low ICF values. Low ICF values are indicative of disagreement among informants as to the use of a particular plant in the treatment of a particular disease category.

FL values were between 10.0–100 (Table 2) and were calculated for 14 species: R. verniciflua Stokes, A. triphylla var. japonica Hara, P. lactiflora var. hortensis Mak, P. koreana Nakai, L. sibiricus L., P. densiflora S. et Z., Imperata cylindrica var. koenigii (Retz.) Durand et Schinz, P. esculenta V. Houtte, T. kirilowii Maxim., P. asiatica L., C. japonicum var. ussuriense Kitamura., C. zawadskii var. latilobum Kitamura, A. lavandulaefolia DC., Lycium chinense Mill. Jointly used 2 species (C. moschata Duchesne and A. triphylla var. japonica Hara), and 3 species (L. sibiricus L., A. princeps var. orientalis (Pampan.) Hara, and C. zawadskii var. latilobum Kitamura) showed the highest FL value (100).

## 4. Conclusion

In this study, the use of ethnomedicinal plants in folk remedies for gynecological disorders in Mt. Gyeryong and Mt. Chilgap, South Chungchoeong Province, was analyzed. The gynecological disorders investigated were primarily related to pregnancy and childbirth. There are reports about taking pumpkins for after childbirth edema,37 In Korea, fumigation with a mugwort solution was traditionally used for perineal care.38 Women in California's Chumash area (USA) relieved premenstrual syndrome by adding pieces of mugwort stem cut to the length of the middle finger to very hot water.26 Ocimum gratissimum and Vernonia amygdalina are regularly consumed as food supplements during pregnancy, normally in the form of a soup called bitter leaf soup, to promote easy progression, strengthen and tone the uterus muscle, and prevent complications such as pain, bleeding, and abortion.39

Regional differences were not found between Mt. Gyeryong and Mt. Chilapan; use of ethnomedicinal plants in treatment of disease has not been investigated extensively in this region, and modern medicine still utilizes folk remedies for gynecological disorders. Research on the efficacy of C. moschata Duchesne and P. lactiflora var. hortensis Mak. has not yet progressed. There is a gap between traditional knowledge of 6 ethnomedicinal plants instruction and existing biomedical research. Therefore this survey is able to be a good case for development of new drugs candidate substance.

## 5. References

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