

Review of Regulatory Policies on and Benefits of Herbal Medicine in the Philippines

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ABSTRACT

Herbal products are the mainstay treatment among patients with limited access to conventional medicines and those seeking holistic modalities for health and wellness. Usage continues to increase globally with the growing engagement of science and technology in the scientific and sound development of herbal products. In the Philippines, legislative controls on herbal medicine were established through the creation of the Philippine Institute of Traditional and Alternative Health Care (PITAHC) which aims to include herbal medicine use in the national health care system. This paper aims to review the current regulatory policies on production, registration, promotion, and use of herbal medicines in the country. Current policies provide measures in regulating, implementing, and monitoring of herbal medicines from production to consumption stages. However, improvements based on provisions from international standards can be adopted to guarantee efficacy and safety for public use. Policies are still lacking regarding implications of long-term effects; efficacy on specific populations (i.e. children, elderly, pregnant women); and on potential interactions with other food and drugs. There is also a need to strengthen studies on the environmental determinants influencing the effectiveness of herbal products. Paucity on studies on cost-effectiveness of herbal medicines is further noted.

Key Words: alternative medicine, health implications, regulatory policies

INTRODUCTION

For the past three decades, around 80% of the world's population relies on herbal products for primary health care.¹ Market sales of global herbal products increase by 15% annually.² In 2015, the World Health Organization (WHO) estimates that the demand for medicinal plants is US\$ 14 billion annually, and will exponentially increase to US\$ 5 trillion by 2050.³ In the Philippines, data from the Department of Trade and Industry (DTI) shows that the export market value of natural health products, mainly herbal medicinal products, is an estimated US\$ 153 million as of 2011.⁴ Furthermore, manufacturing firms in the country for medicinal plants, foods, and personal care products, including cosmetics and home care, have room for growth since firms are operating at around 50-60% of their installed capacity per year.

The production of herbal products in the Philippines is mainly overseen by the collaboration of the DTI and the Chamber of Herbal Industries of the Philippines, Inc. (CHIPI). Additionally, CHIPI engages in the research and development of the herbal products industry together with the Department of Science and Technology (DOST).⁴ Herbal products span not only the plant-based materials in which these were derived from, but also the wide range of herbal supplements, medicines, and other pertinent products used in alternative health care.

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The increasing market demand for herbal medicines, both nationally and internationally, presents a need for strategizing the production, consumption, and regulation of herbal products in the country. This requires an inspection of current policies and regulations related to herbal medicine use, the health implications of herbal medicine products, and recommended measures to ensure that herbal medicines play a crucial component for the country's socio-economic development. This article, therefore, aims to review regulatory policies on herbal medicines in the Philippines. It also gives a background of studies on the health implications of government-recommended medicinal plants (from which various products are derived). Finally, a synthesis of how herbal medicine regulations and its health implications could play a role in the Philippines' overall development agenda is discussed.

REGULATORY POLICIES AND GUIDELINES ON HERBAL MEDICINE

The Traditional and Alternative Medicine Act of 1997

The passing of the Traditional and Alternative Medicine Act in 1997 (RA 8423) was a distinctive global law related to herbal medicines, although behind several years after India (1940), Bangladesh (1992), and Indonesia (1993) passed similar regulations for herbal drugs.^{5,6} Republic Act (RA) 8423 was crafted ahead of WHO Guidelines for the Appropriate Use of Herbal Medicines in 1998, and the European Union's (EU) Directive on Traditional Herbal Medicine Products (DTHMP) in 2004.^{5,7-9} WHO guidelines contain general, comprehensive, and flexible steps for providing technical support to different countries in the promotion, development, and regulation of herbal medicines. The overall aim of the WHO guidelines is to promote the appropriate use of herbal medicines and to encourage its integration in the mainstream health service delivery system.⁷ Meanwhile, the EU's DTHMP provides guidelines on regulatory approval processes on herbal products among EU Member States.^{7,8} Amendments were made in EU Directive 2001/83/EC, whereby the terms "herbal substance", "herbal preparation", "herbal medicinal products," and "traditional herbal medicine products" (THMP) were distinctly defined.⁷ Furthermore, modifications were introduced in the simplified registration of herbal medicinal products (HMPs).⁷

In essence, RA 8423 sets the legal basis for improving the quality and delivery of health care services to Filipinos through the development of traditional and alternative health care and its integration into the national health system.⁵ Its general objectives include formulating standards, guidelines, and codes of ethical practice appropriate for the practice of traditional and alternative health care. Guidelines for the manufacture, quality control, and marketing of different traditional and alternative products are given for concerned government agencies. The law also provides

an official definition of "herbal medicine" which refers to "finished, labelled, medicinal products that contain as active ingredient(s) any plant parts or other materials or in combination thereof, whether in the crude state or as plant preparations."⁵

RA 8423 brings forth the creation of the Philippine Institute of Traditional and Alternative Health Care (PITAHC). PITAHC shall "lead in the research and development, promotion and advocacy, and development of standards on traditional and complementary medicine (T&CM); and ensure its accessibility, availability, sustainability, and integration into the national health care system."^{5,10} It is directly attached to Department of Health (DOH), whereby the Department Secretary serves as the ex-officio chairman of its Board of Trustees.⁵ The Board shall control the corporate powers, activities, and properties of PITAHC and is composed of eleven appointed members from: (1) DOST; (2) Department of Environmental and Natural Resources (DENR); (3) Department of Agriculture (DA); (4) Department of Education (DepEd); (5) Commission on Higher Education (CHED); and representatives of sectors/ industries with direct engagement in traditional and alternative healthcare such as (6) physicians; (7) academicians; (8) non-physician practitioners; (9) biomedical practitioners; (10) environmental sector organizations; and (11) natural and/or organic food industries.⁵

Herbal Medicine Use and Guidelines for Manufacturers

While certain plants have been used as herbal remedies for many decades among Philippine indigenous peoples¹¹⁻²¹, mechanisms related to RA 8423 recognizes that herbal products derived from medicinal plants should have an empirical record of its use and efficacy for at least 50 years.²² This is significantly longer than EU's 2004 DTHMP which stipulates that an herbal medicinal product should undergo constant testing for least 30 years before being exempted from clinical tests and trials for safety and efficacy.⁷ On the other hand, five decades of traditional use of herbal products (TUHP) is too short to assess long term effects, since Robles et al. recommends at least 75 years of empirical usage.²²

Ensuring the long term use of herbal medicines also relies on maintaining constant levels of the bioactive compounds in herbal products. Most bioactive compounds are secondary metabolites produced from plant defense mechanisms against microbes and herbivores. As the plants constantly evolve to survive these stresses, the pharmacological action of these secondary metabolites and their concentration in herbal medicine should be studied.²³ As plants are largely influenced by environmental factors (i.e. soil nutrient content, soil acidity, external stress, among others), monitoring strategies should be in place to ensure that these plants still confer benefits over time.

Once the proper and long-term use of herbal plants have been established, appropriate guidelines must be developed

for manufacturers and distributors, whether operating on a local or international scale.⁷ Production guidelines are particularly important since the country's Food and Drug Administration (FDA) has observed increasing numbers of violations regarding the manufacturing, sales, and distribution of alternative medicines.²⁴ The FDA Circular No. 2014-015 reiterates that "establishments involved in the manufacture, importation, exportation, sale, and distribution of all drug products, including the following are required to be licensed with FDA: (1) allopathic, (2) traditional/alternative (e.g. traditional Chinese medicines, Ayurvedic medicines, homeopathic medicines), and (3) herbal medicines.²⁴ Furthermore, all drug products are required to be registered before they can be marketed, distributed, or sold.¹⁰ In the case of raw materials of herbal products, physical descriptions, quality standards of the finished product with full report on manufacturing process, quality control procedures, stability test for shelf-life, and taxonomic classification of plant ingredients should be present.¹⁰

DOH Administrative Order 172-2004 states that herbal medicines must indicate the lethal dose, pharmacologic effects, non-mutagenicity, subchronic and chronic toxicity, clinical trial results, and bioassays (when applicable) of the final product.¹⁰ Tests should also be in place to screen out any extraneous content during the preparation from its base medicinal plant.¹⁰ For herbal medicines with known or unknown traditional use, RA 8423 lacks provisions for developmental toxicity and carcinogenicity tests. Amendatory guidelines for such tests can be formulated based from the WHO 1998 Guidelines which outlines reproductive and developmental toxicity and carcinogenicity tests, while the EU Directive on THMP indicates that the presence of vitamins or minerals in traditionally used herbal medicines is not an exemption for complying to needed registrations requirements.^{7,10}

The advertisement and promotion of herbal products should strictly comply with restrictions on claims consistent with public health and safety.⁷ Under RA 8423, minimum mandatory information labelling for herbal medicine consists of the following: official name and brand name; dosage form and strength; therapeutic claim; name and address of manufacturer, trader, distributor; net content; Rx symbol (for prescription product); formulation;

indication/s; contraindications; mode of administration; batch/ lot number; manufacture and expiry date; registration number; and storage conditions.⁵ The WHO Guidelines requires additional information on duration of use, age group limitations, use during pregnancy and lactation, and scientific name of active ingredient in addition to common name.⁷ Meanwhile, amendment in the EU 2004 DTHMP added the provision that any advertisement for herbal medicinal product should have the following statement: Traditional herbal medicinal product for use in specified indication(s) exclusively based upon long-standing use.⁷

DOH-Recommended Medicinal Plants for Use in Philippine Healthcare

Guided by the DOH Administrative Order 172-2004, a survey of the studies on 10 DOH-recommended medicinal plants and its FDA-registered herbal medicine products was performed (Table 1).²⁵ These plants have been traditionally used among various indigenous and mainstream ethnolinguistic groups for treating human ailments and various household needs. Evidence of their benefits to particular ailments are as follows:

***Senna alata* L [synonyms: *Cassia alata* L.; *Cassia bracteata* L.f.; *Cassia herpetica* Jacq.; *Cassia rumphiana* (D.C.) Bojer; *Herpetica alata* (L.) Raf.; *Herpetica alata* O.F. Cook & G.N. Collins].** *Senna alata* L is known for its antifungal properties. A search on PubMed with the keywords "*Cassia alata*" and "ringworm" using AND and OR Boolean operators showed four articles from 1994 to 2007. A different AND and OR Boolean operator search using "antifungal," "*Senna alata* L.," "*Cassia alata*," "*Cassia bracteata*," "*Cassia herpetica*," "*Cassia rumphiana*," and "*Herpetica alata*" yielded three studies. The Health Research and Development Information Network (HERDIN) database retrieved 28 articles using the search word "*Cassia alata*." Of the 28, nine were *in vivo* studies and the other entries were *in vitro* studies or literature review. An online search in the Philippine Herbs and Supplements Research Database with the keyword "*Cassia alata*" and synonyms showed eight studies.

C. alata leaf and bark extract showed *in vitro* fungicidal activity against *Candida albicans* and other fungi.^{26,27} *C alata* extract in 17% aqueous solution showed

Table 1. Ten Medicinal Plants Recommended by DOH

Scientific Name (and synonyms)	Common Names	Approved Use
<i>Senna alata</i> L./ <i>Cassia alata</i>	Akapulko, Bayabas-bayabasan	Ringworms and skin fungal infections
<i>Momordica charantia</i>	Ampalaya	Adjunct for non-insulin dependent diabetes mellitus
<i>Allium sativum</i>	Bawang	Adjunct for hypercholesterolemia
<i>Psidium guajava</i>	Bayabas	Tooth decay and gum infection; general antiseptic
<i>Vitex negundo</i>	Lagundi	Cough
<i>Combretum indicum</i> L. / <i>Quisqualis indica</i> L	Niyog-niyogan	Ascariasis
<i>Blumea balsamifera</i>	Sambong	Urinary stones
<i>Ehretia microphylla</i> / <i>Carmona retusa</i>	Tsaang gubat	Antispasmodic for diarrheal diseases
<i>Peperomia pellucida</i>	Ulasimang Bato, Pansit-pansitan	Adjunct for arthritis and gout
<i>Mentha x cordifolia</i>	Yerba Buena	Analgesic for body aches and pain

similar cure rates versus 1% clotrimazole solution for tinea pedis.²⁸ *C. alata* ointment was shown to be comparable to tolnaftate ointment against tinea flava or tinea versicolor.²⁹ A study involving Filipino patients showed 91% cure rate vs. the terbinafine group (97%) for tinea versicolor (n=150) after application of *C. alata* ointment.³⁰

No adverse effects (0 out of 24) were reported in the use of 50% *C. alata* lotion, while transient erythema and pruritus were reported in the 25% sodium thiosulfate lotion group.³¹ Use of *C. alata* ointment showed decrease in pruritus, growth and extension of lesions, erythema, and scale formation from tinea pedis (n=43).³²

Currently, two *C. alata* products are registered in the FDA as cosmetic product: one as a bar soap and the other as a liquid soap.

Momordica charantia. *Momordica charantia* or locally known as “ampalaya” is known for its anti-diabetic properties. A PubMed search using keywords “*Momordica charantia*,” “blood sugar,” and “diabetes” with AND and OR Boolean operators, limited to the past 10 years, yielded 65 results on human studies. Philippine Herbs and Supplements Research Database listed 10 studies for the keyword “*Momordica charantia*.” HERDIN database retrieved 50 studies, 10 of which were human studies.

A review of *M. charantia* studies in animal models showed the following observed effects: decrease in the protein tyrosine phosphatase 1B activity and hexokinase activity, decrease in glucose uptake activity in the intestinal fragments, increase in insulin receptor substrate 1, increase in glucose transporter type 4 in skeletal muscle, and increase in pancreatic beta cell function, among others.³³ A local, double-blind, placebo-controlled, single-dose study of 100 mg/kg/day of *M. charantia* tablets from the Makiling (Philippines) variety showed consistent lower post-prandial glucose levels compared to 60 mg/kg/day, 80 mg/kg/day, and placebo (n=40) treatments. No adverse events were reported.³⁴ In a randomized, double-blind, placebo-controlled study of 40 diabetic patients, there was an average decrease in fasting blood sugar of 0.41 mmol/L after a three-month intake of *M. charantia* capsules in addition to standard antidiabetic therapy. However, the difference was not statistically significant.³⁵ An open-label, crossover clinical trial of 27 diabetic patients who were given *M. charantia* fruit and tea vs. commercially prepared tea showed an average reduction of HbA1c by 0.63 (p=0.005). In this study, adverse events noted were abdominal cramps, soft stools, and increased frequency of bowel movements.³⁶

The variety of the plant consumed affects the magnitude of health effects. In an animal model study, the wild variety of *M. charantia* versus the hybrid variety, and the positive control glibenclamide, have varied effects in lowering blood sugar levels as well as total cholesterol and triglyceride.³⁷ This may be due to the varying concentrations of saponins across varieties, one of the reported antidiabetic components of *M. charantia*.³⁸ This difference of active ingredient

concentrations across plant varieties was also demonstrated in a similar study for *Euphorbia hirta* Linn.³⁹ As of the time of publication, 47 *M. charantia* products with no therapeutic claims were registered in the FDA as tea, powder, food supplement, whether singularly or in combination with other herbal medicines.⁴⁰

Allium sativum. *Allium sativum*, locally known as “bawang” is used traditionally for lowering blood pressure. The HERDIN database yielded 47 studies and two were studies on human subjects that investigated antihypertensive and lipid-lowering properties. Two of the 36 researches in the Philippine Herbs and Supplements Research Database dealt on blood pressure effects on human patients.

A meta-analysis of 20 trials (pooled n=970) involving garlic showed an average decrease in the systolic blood pressure of 5.1±2.2 mm Hg (p<0.001) and 2.5±1.6 mmHg (P<0.002) for diastolic BP when compared to placebo.⁴¹

In a local study, hypercholesterolemic and hypertensive patients (n=98) were given garlic, simvastatin, or metoprolol over a course of six weeks. There was a decrease in the mean systolic and mean diastolic blood pressure among patients given garlic compared to metoprolol but the difference was not statistically significant.⁴² A four-week, double-blind, crossover study among 20 patients with mild hypertension showed a mean decrease of 4.42 mm Hg for systolic BP and 4 mm Hg for diastolic BP. Lowering of cholesterol was noted but it was not statistically significant. Adverse events such as drowsiness, epigastric pain, and flatulence were recorded.⁴³

At the time of publication, three *A. sativum* supplements as a single active ingredient and two supplements combining garlic with other herbal supplements were registered with the FDA.

Psidium guajava. Locally known as “bayabas,” 11 studies were retrieved from PubMed using the search terms “*Psidium guajava*,” “guava,” “dental caries,” AND OR “gingivitis.” One randomized controlled trial showed that an intake of 200 mg/day of guava among young, non-smoking adults (n=48) for 14 days of oral hygiene abstinence prevented the development of gingivitis.⁴⁴ Twenty-nine studies were listed under the Philippine Herbs and Supplements Research Database, and one study showed potential for improving burn wound healing and ecthyma.⁴⁵ The FDA lists around 50 products with guava as an ingredient in soaps, oils, feminine washes, and food supplements.

Guava contains flavonoids, in particular quercetin and guajaverin, which are known for antimicrobial and anti-inflammatory actions. Ethanol extracts (0.1%) from guava chewing sticks neutralized leukotoxin-induced cell death by *Aggregatibacter actinomycetemcomitans*, involved in the development of periodontitis.⁴⁷ Ethanol extracts of *P. guajava* showed significant inhibitory activity in vitro for *Streptococcus mutans* and *Lactobacillus acidophilus*.⁴⁶

Vitex negundo. *Vitex negundo* is locally known as “lagundi.” A PubMed search returned three studies while the Philippine Herbs and Supplements Research Database

showed 50 researches. One preliminary report showed significant decrease in cough frequency reduction of *V. negundo* but no difference in the global evaluation between *V. negundo* and placebo for chronic cough among former smokers (n=12).⁴⁷ A bronchodilatory effect was also demonstrated with *V. negundo* tablets versus theophylline in a randomized double blind study with 40 asthmatic subjects. A Phase III clinical trial for patients with acute non-bacterial cough of mild to moderate severity showed a decrease in frequency of coughing.⁴⁸ Adverse events noted in a study among health asthmatics were vomiting, desquamation of the skin over the palms, and increased frequency of urination.⁴⁹ The FDA posts 46 products with *V. negundo* alone or in combination with other medicinal plant extracts in the form of cough syrups, powders, teas, and capsules.

***Quisqualis indica* L. [synonym: *Combretum indicum* L.].** *Q. indica* is locally known as “niyog-niyogan.” No human studies were retrieved in PubMed using AND and OR operators of “*Quisqualis indica* Linn.,” “*Combretum indicum*,” “Rangoon creeper,” “niyog-niyogan,” and “antihelminthic”. Nine articles were retrieved from the Philippine Herbs and Supplements Research Database and one study described 11 human patients treated with *Q. indica* L for ascariasis.⁵⁰ There are no products registered in the FDA with *Q. indica* as active ingredient.

***Blumea balsamifera*.** *B. balsamifera* is locally known as “sambong.” There are no retrieved studies from PubMed for the keywords “*Blumea balsamifera*,” “urinary,” “stones,” and “calculi.” Of the 50 studies retrieved for the keywords “*Blumea balsamifera*,” no studies were retrieved on human subjects assessing the effect of *B. balsamifera* on urinary stones. A total of 27 FDA-registered products contain *B. balsamifera* as a single active component, or in combination with other medicinal herbs, in the form of capsule or tea.

***Carmona retusa* [synonym: *Ehretia microphylla* Lam.]** *Carmona retusa* is locally known as “tsaang-gubat.” A PubMed search using the keywords “*Ehretia microphylla* Lam” and “*Carmona retusa*” showed three articles but none dealt with abdominal colic, dysentery, or diarrheal diseases. Of the 49 results retrieved from an online search engine using the keywords ““*Ehretia microphylla* Lam” AND OR “anti-diarrheal,” one animal (mouse) study showed antidiarrheal activity from the triterpene mixture of *Carmona retusa* leaves.⁵¹ There are five products registered with the FDA containing *E. microphylla* as active ingredients in the form of tea and powder.

***Mentha x cordifolia* Opiz ex Fresen.** *M. cordifolia* is locally known as “yerba/herba buena” or “hilbas.” No articles were retrieved in PubMed using the plant’s scientific names. However, a study on one of its relative species *M. cordifolia* showed that a single dose of the aqueous extract of *M. cordifolia* prolonged the sleeping time induced by sodium phenobarbital in mice.⁵² Another relative species, *Mentha x piperita*, has extensive literature for its gastrointestinal actions.⁵³ Two FDA registered products were noted to have

M. cordifolia as one of their active ingredients and is available as soap and food supplement.

***Peperomia pellucida*.** *Peperomia pellucida* is known locally as “ulasimang bato” or “pansit-pansitan.” *P. pellucida* is rich in crude protein, carbohydrate, and total ash content including potassium, calcium, and iron as main elements. Its aerial parts demonstrated analgesic and anti-inflammatory actions by interfering prostaglandin synthesis.⁵⁴ A phytoscreening of the plant shows that *P. pellucida* has the presence of flavonoids, tannins, alkaloids, steroids, and triterpenoid.⁵⁵ Thirty studies were listed in the Philippine Herbs and Supplements Research Database and one rat model study showed significant decrease in plasma uric acid three hours post-administration of *P. pellucida*.⁵⁶ One registered product of is FDA approved in combination with *V. negundo* and *M. cordifolia* as capsule.

In summary, the investigation on the benefits of DOH-recommended herbal plants is an active area of research. There is a need to ensure that the knowledge of how to use these plants, are documented and translated into subsequent policies and development concerns. PITAHC’s strategic plan for 2017-2022 emphasizes a research and development agenda to include the documentation of Philippine cultural heritage on traditional medicine.¹¹ The expected outputs will be utilized for the development of culture-sensitive health education materials, policies, and program development of herbal medicine use, conservation of the natural environment where herbal medicines are derived from, and the needed advocacy to mainstream these goals.

LOOKING FORWARD: SUSTAINING HERBAL MEDICINES UTILIZATION IN THE PHILIPPINES

In spite of the various health benefits of herbal medicines, it should not be considered as the sole method for treating human ailments. Herbal medicines, like conventional drugs, have adverse effects that should be noted especially in prescribing its use for a specific disease. Caution must be exercised in using alternative and herbal medicines due to issues concerning its effects on adolescents, children, elderly and pregnant women; and its potential interactions with food and other drugs. Similarly with conventional medicines, there are varied health effects that should be considered including cost-effective implications and growing antibiotic resistance.

A holistic healthcare approach combining traditional, herbal, and alternative medicines with conventional drug therapies is foreseen as the model for future healthcare systems. This requires regulations that cover both herbal and traditional medicines. In cases where traditional medicines are proved ineffective, herbal medicine products should be appropriately valued, readily accessible, and promoted efficiently as an alternative means of treatment. In cases where herbal medicines are not as effective, research should determine pathways and treatment methods which consider

the strength of conventional medicine. Sustaining this synergy between herbal and conventional medicine requires monitoring and evaluation systems, and the implementation of identified recommendations to improve holistic healthcare approaches.

Regulations should be in place to secure the sustainable use of plants and other natural resources used for the growth and production of herbal medicines. Under RA 8423, DENR serves as one of the Board members of PITAHC. However, as of this review, operating regulatory guidelines of the agency have no environmental provisions to ensure the reliable supply of herbal medicinal plants. One factor to consider in developing a national policy regarding such concern can be gleaned from international guidelines, such as the *Guidelines on the Conservation of Medicinal Plants* by WHO, the International Union for the Conservation of Nature (IUCN), and the World Wide Fund for Nature (WWF). Based on these guidelines, the need for ensuring the reliable supply of quality herbal medicines emphasizes the concurrent identification of necessary measures to efficiently manage local natural resources in which herbal plants are derived. In this way, herbal medicine production and consumption contributes to the country's overall development and growth by maintaining essential natural resources, and at the same time securing public health.

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