EVALUATION OF PHYTO-THERAPY AT EsSALUD- CENTRO DE ATENCION DE MEDICINA COMPLEMENTARIA, TRUJILLO

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Executive Summary

A brief history of Complementary Medicine in Peruvian public health is followed by a description of the latter’s current function within the social security system’s Centros de Atencion de Medicina Complementaria (CAMEC). A patient’s progress is traced from referral through diagnosis and therapy via a variety of treatments modalities, including phyto-therapy. Quality control standards for sustainable bio-agronomy of medicinal plants are also outlined.

The relevance of the NIH-MHIRT project to a needs assessment for the EsSalud-CAMEC phyto-therapy program is discussed in a survey of work to date. Pertinent UN guidelines for conservation projects in the context of the global interface between biodiversity conservation and Traditional Medicine are addressed. The feasibility of applying these guidelines to develop a supply chain of properly cultivated, harvested and processed medicinal plants is assessed. Options for a community-based garden near the highland city of Huamachuco are evaluated.

Recommendations for enhancing the EsSalud-CAMEC phyto-therapy program are:

1. Research: Formalize a collaborative research and publishing relationship with UNT.
2. Education and Outreach: Cooperate with the Ministry of Culture’s Chan Chan site museum in developing a docent program for their demonstration garden.
3. Supply Chain: Develop a sustainable bio-agronomy medicinal plant garden run by the Comunidad Campesina Juan Velasco Alvarado to supply the Natural Pharmacy at EsSalud-CAMEC in Trujillo.
4. Curandero Interface: Build on a long-standing Trujillo tradition of collaboration between practitioners of modern medicine and Traditional Medicine in phyto-therapy, ethnobotany, pharmacy, psychology and community outreach.
Complementary Medicine and Public Health in Peru

Starting in the early 1990s, Peru has been a major innovator in Latin American public health. In an effort to implement World Health (WHO 1978) guidelines for primary health care linked to Traditional Medicine in third-world countries, Peru organized the first two international conferences (1979 and 1988) on Traditional Medicine under the leadership of world-renowned Peruvian physician, scholar, and then-senator Dr. Fernando Cabieses. This eventually resulted in the founding of the Instituto de Medicina Tradicional (INMETRA) within the Ministerio de Salud (MINSA) in 1991 with Dr. Cabieses as its first director for the next decade. In that time Dr. Cabieses was instrumental in developing a long list of innovative projects, including a network of botanical gardens throughout Peru, 200 monographs on medicinal plants, mid-wife maternal-infant services, numerous international public health conferences, a medicinal plant database linked to Natural Plant Alert (NAPRALERT) in the U.S., and a chain of community health education centers.

Paralleling INMETRA’s work, in 1998, Peru’s Social Security System, EsSalud, in cooperation with WHO and the Pan American Health Organization (PAHO) developed the Programa Nacional de Medicina Complementaria (PNMC), opening three centers (CAMECs). Originally located in Peru’s major urban centers (Lima, Arequipa, and Trujillo), as of 2013, there were 25 Centers in the country, complemented by another 25 medical units.

In 2001, in cooperation with PAHO, the PNMC conducted a study comparing the use of Complementary Medicine (CM) and Allopathic Medicine (AP) in clinics and hospitals within Peru’s Social Security System. Researchers followed up with 339 patients over one year—170 treated with CM and 167 with AM. They analyzed treatments for osteoarthritis, back pain, neurosis, duodenal ulcers, tension, migraine headaches, and obesity. Results showed that for each evaluation criterion—clinical efficiency, client satisfaction, and reduction of future risks—the efficacy of CM was higher than that of conventional therapy, including fewer secondary effects, patient perception of higher outcomes, and cost-effectiveness of 53 to 63% for CM (EsSalud/PAHO 2000). In 95% of the cases reviewed the cost of CM was less than that of AM.
The first clinical treatment modality of twelve eventually developed by the CAMECs—all of which were modeled after Chinese Traditional Medicine—was phyto therapy as outlined in *Manual de Fitoterapia*, compiled by Martha Villar—currently national director of PNMC—and Oscar Villavicencio in cooperation with WHO. In addition to summarizing the scientific literature on the botany, phytochemistry, and pharmacology of 76 medicinal plants, it outlines illness categories treatable by vegetal species as well as quality control and agricultural standards (Villar and Villavicencio 2000). In 2009, a pilot program prescribing 20 of the 76 medicinal plants was initiated in the CAMECs of Lima, Arequipa, and Trujillo (Fernández 2009). It is this program that is the object of the current evaluation.

**EsSalud Referral System**

The public health system in Peru is based upon two alternatives: one that includes the general public served by the Ministerio de Salud (MINSA) and another consisting of the insured population served by the Seguro Social de Salud-EsSALUD.

The hospitals belonging to the Ministerio de Salud (MINSA) serve the general public without considering if the users are insured or not. With the goal of reaching the more economically limited strata of society, the Peruvian Government has created the SIS (Seguro Integral de Salud), which prioritizes attention to the most needy and vulnerable communities.

The MINSA also includes the Instituto de Medicina Tradicional (INMETRA), in charge of everything related to Traditional Medicine in Peru and conducting research on ethnobotany and phytotherapeutic resources. With the exception of a few pilot programs, systematic medical attention using resources from Traditional Medicine has not received much attention.

On the other hand, the social security system of EsSALUD serves the health-insured active working class, whose payments are deducted by their employer from their monthly salary. In addition, this institution has created the independent health insurance system where usage requires a personal payment.

Since May of 1998, EsSALUD has implemented the Programa Nacional de Medicina Complementaria (PNMC). In the dependent health centers belonging to this program, medical attention is provided with natural resources including medicinal plants. In addition, other
therapeutic services include: Acupuncture, Geotherapy (mud baths), Hydrotherapy (saunas), Lasertherapy, Trophotherapy (diet), Massage Therapies, Bio-dance, Tai Chi, Meditation and relaxation, among the most important.

There are two ways a patient can get to the Centro de Atencion de Medicina Complementaria (CAMEC) of EsSALUD. When a patient suffering from an illness visits his or her local hospital, the attending physician can either suggest that the patient attend CAMEC and provide a referral, or the patient can take the initiative and go directly to CAMEC.

Thus, the attending doctor can either recommend and refer the patient to CAMEC, or the patient can solicit CAMEC directly. An issue here is a lack of competency and/or awareness of Complementary Medicine among the medical profession. If a doctor is unaware of Complementary Medicine as an option, he or she may fail to recommend CAMEC, or may even discourage a patient from seeking alternative medicine. Most doctors are unaware of this discipline because it is not yet incorporated into Peru’s medical school curriculum. Thus, most doctors are not introduced to Complementary Medicine unless they are hired by EsSALUD and receive intensive training before they can begin their service. In order to be hired in the public sector, candidates must have also served for a year in vulnerable communities after their last year of medical school.

An interesting experience that takes place among health professionals is the Servicio Rural Urbano Marginal (SERUM) where, after graduation, they are obligated to participate for a year practicing their profession in underserved communities within the country. This is where they have more contact with other forms of medical attention such as Traditional Medicine.

**Complementary Medicine Attention Flowchart-EsSALUD**

Once referred, the first step for a new patient at the EsSALUD-CAMEC clinic is an interview with a nurse. The nurse asks the patient about possible risk factors that could be contributing to the illness, including smoking, poor diet, a lack of exercise, family health history, and current medications. In addition to this basic health background, the nurse also asks about the social and emotional dimensions of health. This could include problems in one’s personal
life, as well as the patient’s self-reported psychological history. The approach of EsSALUD is holistic, seeing all of these factors as contributing to the well-being of the patient. The complete professional staff at EsSalud consists of a doctor, nurse, psychologist, physical therapist, and pharmacist. From the information provided the nurse makes a preliminary diagnosis as well as providing an educational plan for the patient. This plan could include changes in lifestyle, diet, and other measures to improve overall health.

With the information gathered by the nurse, the doctor is able to provide attention tailored to the individual patient. The doctor performs a further case history of the patient to determine any additional factors contributing to the health problem. He/she then performs a full physical examination of the patient and makes a diagnosis based on all the information that was collected. Based on this diagnosis, the doctor provides a treatment plan specifically crafted for the patient. This could include a prescription of medicinal plants and appointments with a psychologist, or any combination of the other services offered in the same EsSALUD location.

After consultation with the physician, the patient again meets with a nurse to review the treatment plan. They discuss the herbal and physical exercise components of the plan and the patient signs a consent form.

This second meeting with the nurse is a critical part of EsSalud’s patient-centered approach, as it ensures patient understanding of the recommended treatment. Moreover, patients may be more comfortable with nurses than doctors, since nurses have more time to spend with patients than doctors do, and therefore are often able to form a better rapport with them. Since patients have more time to digest the information, and are given more specific instructions by the nurse, they might come up with more questions to ask the nurse at this second meeting than they would in their shorter medical consultation with the physician.

According to the medical criteria, the patient is referred to the professional physical therapist or the psychologist. Attention with the physical therapist can involve an application of the therapies mentioned above.

Each CAMEC has a Natural Pharmacy where natural products as well as homeopathic medicine and floral essences are dispensed. Also, the pharmacist responsible for the pharmacy dedicates himself to the phytomedical preparations and research in this area. He is also
responsible for recording the possible side effects caused by the consumption of Complementary Medicine, as well as information obtained in interviews that this professional has with the patient.

The pharmacist also records the potential interaction effects of the CAMEC treatment upon the pharmaceuticals previously consumed by the patient before undertaking Complementary Medicine therapy. This helps to corroborate prior studies affirming that the treatments with Complementary Medicine contribute to the reduction or suspension of conventional pharmaceutical treatment. For example, the surveys included in EsSalud’s annual report for 2012 show that 29% of patients surveyed were able to stop all prior use of pharmaceuticals (EsSalud 2012: 53)

EsSalud’s mission is disseminated by promotores de salud, health promoters who work as volunteers within their communities to raise awareness and generate interest in EsSalud’s work. Promoters are always past patients of EsSalud who have had a positive experience and want to promote the practice of Complementary and Alternative Medicine throughout Peru.

Círculos de Salud (“Health Circles”) are community health groups led by promoters. There are currently 25 Círculos in Trujillo alone. Most Círculos meet monthly, and once a year all Círculos convene to exchange ideas and suggest improvements in service provision. Círculos encourage healthy living in a variety of ways, like discussing good nutrition and practicing group exercise. Volunteers also conduct education programs at CAMEC centers as well as providing information to the public. In Trujillo, they also maintain a demonstration garden of medicinal plants.

Quality Control

The Manual de Fitoterapia (Alcedo 2001: 393-398) published by EsSalud details the appropriate bio-agricultural practices for the planting, harvesting, and preparation of medicinal plants. It covers topics such as: the management and promotion of biodiversity; recycling; the integration of animal and agricultural production; the conservation and improvement of resources; and ecological sanitary practices that prevent pollution. Additionally, the manual describes the fertilizers authorized for the ecologically-responsible growing of plants, which include organic fertilizers produced on the farm, mineral additives, and activators for compost.
It advises against using fertilizers acquired from ecologically-irresponsible suppliers and explains how to control plant disease with organic pesticides. Moreover, the manual describes standards for the sustainable harvest of medicinal plants, including information about climate, soil, geographical location, and irrigation necessary for different plants. It lists more specific guidelines as well, such as, the optimal times of day and in the plant’s lifecycle to harvest each component of the plant, and correct preparation and labeling methods.

The manual (Cerón 2001:399-405) also includes an important chapter on the quality control and registration processes that qualify plants as fit to use for medical purposes. It notes that with the signing of the Alma-Ata Declaration of 1978 by the WHO, regulations on medicinal plants were recommended to ensure better quality control. Resolution WHA 31.33 of May 1978 established that medicinal plants have therapeutic, but sometimes toxic properties, and that norms needed to be established to test them. The resolution established criteria and methods to test plant products effectively to ensure that they are medically safe to use. During the 1990s, the trade in natural products in Peru increased (*Manual de Fitoterapia, 2001: 399*). As a result, in July 1997 the Peruvian Government began to regulate the commercialization of medicinal plants under article 63 of the General Health Law Num. 26842. Regulations for Registration, Control and Sanitary Supervision of Pharmaceutical Products Num. 010-97-SA followed later that year, bringing about the creation of the *Registro Sanitario* (Sanitary Registration). This permitted the commercialization of medicinal plants under the control of the government’s quality control and sanitary regulations, which ensure the safety of the consumer. Under these conditions, all medical products must be proven to be apt for human consumption and that “their efficacy for a determined therapeutic use, or their application in a medical pathological problem, are sustained by monographic investigations.” (*Manual de Fitoterapia, 2001:400*)

There are two types of Natural Therapeutic Resources defined in the *Registro Sanitario* regulations. The first are Natural Resources for Health Use, which have been proven to have pharmacological activity but aren’t processed or altered to isolate the pharmaceutical components of the plant or mineral. These can be sold, but containers cannot contain labelling
that suggests pharmaceutical benefits. The other therapeutic resources defined are Natural Products for Health Use, which include plants or minerals that have been tested extensively and shown to have pharmaceutical benefits as well as being processed to extract the active components. Because this often requires advanced technology, Natural Products are processed in registered pharmaceutical laboratories that must abide by appropriate quality control regulations as well as the Registro Sanitario regulations. In this process, they cannot be modified chemically and must be identified and labelled properly to ensure the safety of the patient.

NIH-MHIRT and North Peruvian Ethnobotany

Working since 2002 on a grant (Minority Health & Health Disparity International Training-MHIRT from the National Institutes of Health -NIH, Washington, D.C.), medical anthropologist Dr. Douglas Sharon (UC Berkeley, ret.; SDSU Adjunct Professor) and ethnobotanist Dr. Rainer Bussmann (Director, W.L. Brown Center, Missouri Botanical Garden-MOBOT)—in addition to developing a data base of 512 medicinal plants and 974 mixtures (Bussmann and Sharon 2006a, 2007b; Bussmann, Glenn, Meyer, Kuhlman, and Townesmith 2010)—have demonstrated that herbal commerce is a major economic resource in Peru (Bussmann, Sharon, Vandebroek, Jones, and Revene 2007) and that the local population knows and uses these species as frequently as modern pharmaceuticals (Bussmann, Sharon, and Lopez 2007; Bussmann, Sharon, and Garcia 2009). Also, the supply of these plants shows signs of serious reduction due to overharvesting wild species and a lack of conservation measures on the part of a peasant population inadequately remunerated (Revene, Bussmann, and Sharon; Smallwood 2011).

In an effort to begin to remedy the loss of this priceless resource, in 2008, leaders of the comunidad campesina (peasant community) Juan Velasco Alvarado approached Dr. Sharon to petition assistance from MHIRT and MOBOT in developing a botanical garden and associated conservation programs in the sierra above the highland city of Huamachuco, five hours by bus to the east of Trujillo. As a result, at the end of the field season MHIRT student, Gabriel Chait (now at the School of Forestry & Environmental Studies at Yale University) and two medical
students from SUNY Stony Brook, Brian Jonat and Kamron Pourmand, volunteered to stay on and join Ashley Glenn, Director, “Sacred Seeds” Community Garden Program of the Missouri Botanical Garden (MOBOT) to begin working on this project with *hierbateras* (female herbalists) on land donated by the community. The next year (2009), Glenn and Chait returned. From August 2010 until July 2011, Chait continued the work on a Fulbright scholarship in cooperation with Pablo Escobedo, Vice President of Juan Velasco Alvarado Comunidad Campesina and Peace Corps volunteers Matt Kolb and Ryan Alexander. Currently, although the original garden is not operative, community members are developing a variety of conservation and sustainable bio-agricultural measures with the help of a Peruvian NGO.

Another community garden initiative was begun in 2009 near Trujillo at the archaeological site museum at Chan Chan, the largest pre-Columbian urban center in the Americas. In a collaboration including the museum director, Dr. Vivian Araujo, local schools, “Sacred Seeds” director Ashley Glenn and two Linfield College students, Charlotte Trowbridge and Joshua Ness established this garden, under the guidance in the field of the chair of their department, anthropologist Dr. Thomas Love.

In 2012, Linfield students were back in Trujillo under the tutelage of Dr. Love and Linfield botanist, Dr. John Syring, who conducted an assessment of the Huamachuco project as well as working with MHIRT co-director, Dr. Sharon, and EsSalud-CAMEC’s medical director, Dr. Luis Fernández in a medical anthropology study of patient attitudes and knowledge regarding traditional herbal therapy conducted by Linfield students, Susana Fajardo and Ana Sours. As had been discovered in prior studies at a private medical clinic and an herbal clinic, the public’s knowledge is extensive and daily use presents a viable alternative to that of pharmaceutical products. This project was complemented by MOBOT’s Ashley Glenn who did a superb job of re-organizing CAMEC’s demonstration garden of prescribed medicinal plants and associated education programs run by the center’s volunteer docent *promotores de salud*. As a direct result of the success of the 2012 field season, Dr. Fernández extended invitation to MHIRT and Linfield students to return and conduct a critical evaluation of the center’s phyto-therapy
services, including efforts to develop a supply chain of species from Huamachuco where EsSalud has an office and land available for cultivation.

**Biodiversity Conservation and Traditional Medicine**

A policy report, *Biodiversity, Traditional Knowledge and Community Health: Strengthening Linkages*, published by the United Nations University—Institute of Advanced Studies in Yokohama, Japan addresses many of the issues discussed above (Unnikrishnan and Suneetha 2012). Building on the WHO Alma Ata Declaration of 1978 relating to Traditional Medicine and primary health care, the UN Convention on Biological Diversity of 1992, and the UN’s Middle Development Goals (MDGs) of 2011, this document shows that links between Traditional Medicine and biodiversity are strengthened by three processes: 1) a medical approach involving national efforts to integrate Traditional Medicine into institutional health care delivery which includes challenges related to safety, quality, efficacy, access, and regulation; 2) a market-oriented approach focused on drug development or tourism promotion focused on biomedical products and services as marketable commodities; and 3) a community-focused approach activated by civil society organizations focused on conservation implemented through a grassroots mobilization process involving health professionals, botanists, conservationists, and community activists.

The community-based approach shows allegiance to the Alma Ata primary health care model. Examples include the barefoot doctors strategy in China and the social health activist programs in India. Given the centrality of biodiversity in human lives, there still is a need to develop sustainable strategies for health maintenance combined with conservation of biological resources and linked to local knowledge and practices. This is relevant even in developed countries where there is an increasing demand for alternative and complementary medicine.

At the beginning of the 2012 UNU report in a “Message from the Director,” Govindan Parayil (p. 6) assesses progress towards the CBD agenda of a global development path that is sustainable, equitable, environmentally just, and economically rewarding. He sees that the prognosis is not encouraging. Progress has been made, but we still are falling far short in even
sustaining current levels of well-being. “Negative environmental trends continue to be exacerbated by human interventions—primarily led by a model of unsustainable and conspicuous consumption.” He adds: “The extraordinary emphasis on developing produced capital appears to have overwhelmed all other aspects of natural capital required for our well-being.” (ibid.)

On the positive side, Parayil notes increased awareness of the gap between planning and implementation. Welcome signs of change include “increasing resolve to align production activities with environmental and equity considerations” as well as “efforts aimed at reforming global institutional structures to create more synergies and effective implementation of relevant policies.” He concludes:

Current accepted standards of practice and business norms must be re-oriented to include a more consultative policy setting with all major actor representatives. [This] would require designing regulations that acknowledge the need for balance among all forms of capital, and incentives that provide equitable access to resources and services. (ibid.)

The UNU policy report (pp. 27-64) documents 30 successful community-based projects from around the world. Despite their success in finding workable solutions to meet conservation and primary health care needs, the scale of operation of these programs has not been enhanced or expanded for a number of reasons, some of which are listed below:

- **There is a clear need to include ecological, conservation, and sociocultural factors in goal-setting related to health and development programs.**

- **High external dependency, especially in pharmaceuticals and medical technologies, disincentivizes local innovations in Traditional Medicine and healthcare.**

- **Through a top-down health care approach, societies have organized themselves to be more disease-centric than wellness-centric. A paradigm shift in the mind set as well as in systems and structures to wellness (prevention/promotion) is essential.**

- **Traditional health promotion and related conservation schemes focused chiefly on medicinal plants have been seen exclusively as avenues for economic development.**
• At the policy level, there is a tendency towards non-realistic target setting. Implementation at the community health worker level would greatly enhance successful outcomes.

• Attempts to document and protect traditional medical knowledge in searchable inventories are still insufficient. Attempts to open such inventories for research purposes still play into mainstream drug development processes—more than local health care.

• High erosion of traditional knowledge and lack of perceived support for traditional health practitioners have led to a decrease in the receptivity to and transfer of all aspects of such knowledge between generations.

• The dominant education and research systems tend to enhance knowledge and technologies without much attention to the capacities and needs of specific regions or populations.

• There is a clear need for designing a radical and innovative approach to integrate Traditional Medicine into mainstream health systems. This would further require full institutional backing from various related governmental and non-governmental agencies that link supply chains of medicinal resources with health practitioners and consumers with the highest standards of quality, safety, and efficacy (pp. 66-68).

With regard to a plan of action, this policy paper advocates the use of integrated rapid assessment protocols similar to those used in some of the case studies outlined in the report—duly adapted to local cultural and environmental circumstances. It provides an assessment framework and the following “potential strategies”:

• Assessment methods to inventory resources and knowledge used in health care.

• Traditional knowledge validation, generation, and use.

• Capacity building for different stakeholders.

• Cross-learning between different knowledge systems.
• Mechanisms to protect traditional resources and knowledge.
• Linking with economic development objectives.
• Expansion of partnerships with different stakeholders.
• Effective communication strategies.
• Synergizing local community initiatives with civil society organizations (pp. 70-71).

Complementing the positive examples from the UN University-Yokahama report are the lessons learned from a failed project in Northern India which sought to develop a medicinal plant value chain between local Himalayan farmers and a Dutch company (Ayurveda Health) in a project undertaken by The Royal Tropical Institute (KIT) and the Center for Sustainable Development (CSD) of the Netherlands in cooperation with local government agencies (Alam and Belt 2009). The authors point out that worldwide medicinal plants are being depleted at a rapid pace due to large-scale, unsustainable collection from natural habitats. Conservation of these species is critical for four reasons: 1) they are a source of natural ingredients used by the manufacturers of modern pharmaceuticals resulting in a large and increasing demand (Balick and Mendelsohn 1992; Lambert et al. 1997; FAO 1997); 2) medicinal plants form the basis of homeopathy and traditional medicines, and, along with traditional knowledge, are crucial for traditional healers, who play a vital role in the lives of poor people and their animals in developing countries (WHO 1999b; Hamilton 2008); 3) the collection and marketing of medicinal plants is a valuable source of livelihood for large numbers of poor people in developing countries; and 4) medicinal plants are an essential component of biological diversity and conservation (SCBD 2001).

Regarding lessons learned, three reasons are given for the project’s lack of success: 1) poor quality planting material supplied to farmers resulting in high mortality of plants; 2) too many uncoordinated farmers planting uneconomic plots on marginal land which resulted in low upkeep motivation and unrealistic expectations that were not realized; and 3) poor understanding of local farming dynamics and the emergence of a successful alternative cash crop. These are factors that should be evaluated in any efforts to build a successful supply chain for CAMEC-EsSalud, Trujillo.
The Huamachuco Connection

In July of 2013, we (Dr. Douglas Sharon and students Elizabeth Pon and Sam Gauksheim) traveled to Huamachuco to re-establish contacts with people who had previously worked with Ashley Glenn, director of MOBOT’s Sacred Seeds project, and Fulbright grantee and former MHIRT student, Gabriel Chait. Current Peace Corps volunteer, Lindsay Womack, who has built a greenhouse on Beneficencia land, was instrumental in introducing the group to important Huamachuco citizens. She has been kind enough to volunteer her services as the MHIRT representative in Huamachuco. In the meetings she arranged, we gauged interest in the development of a medicinal plant garden to help supply EsSalud clinics, especially the one in Trujillo.

First, we met with Enith Gaytan, a psychologist at the Huamachuco MINSA (Ministerio de Salud) hospital. She is the former president of the Sociedad de la Beneficencia Pública in Huamachuco and was a key contact in Glenn and Chait’s work. She was enthusiastic about the project since her 2009 proposal to plant a botanical garden at the Beneficencia had not been funded. Also, she offered to organize a meeting later in the day with people she thought might be interested in assisting our efforts. She briefly introduced us to the administrative officer, and discussed MINSA’s ongoing plans to renovate and expand their hospital.

Next, we went to Huamachuco’s branch of EsSalud where we met Dr. Silva, the head pharmacist. She and the director, Dr. Flor Barrios, expressed interest in participating. After exchanging contact information, Dr. Silva took us on a tour of EsSalud’s land. She explained that they could easily remove a rather extensive concrete surface to make room for a medicinal garden. However, the plot of land available for planting is no larger than 15 square meters; there is little chance one could grow enough to supply an entire clinic on this property, but the space would be adequate for a docent-run demonstration garden. To help them get started we need to submit a solicitud (proposal) to their Gerencia (Management).

Finally, Lindsay helped set up a meeting with the current president of the Beneficencia, Carmen Cisneros Silva. She was receptive but was eager to see a formal solicitud. Moreover, since the Beneficencia is now under the jurisdiction of the Municipality of Huamachuco, the
proposal would have to be addressed to that entity. Dr. Sharon responded by saying that MHIRT was only offering its services. If the Beneficencia was interested in pursuing a botanical garden of medicinal plants—as it was in 2009—then the solicitud would need to come from them. We offered to support their efforts with know-how and logistics as we did in the past while working with Comunidad Campesina Juan Velasco Alvarado.

Enith Gaytan organized an evening meeting with Maritza Monzón and an agricultural engineer Juan Alfonso Tam Córdova, who were critical players in the botanical garden proposal of 2009. Maritza is an administrator at the Escuela Democrática, the secondary school that Enith’s children attend. She was also the administrator at the Municipalidad who worked closely who Glenn and Chait. Also present was Alex, an Italian citizen who is working in Huamachuco collecting folklore about plants. All expressed interest in participating, although Enith made it clear that, though she would like us to succeed for the good of Huamachuco, she at present has too many responsibilities to play an active role in our endeavors. Besides this, the Escuela Democrática is focused on flowers as part of a collaboration with a local NGO. While we originally believed that the garden that Glenn and Chait eventually organized in the high country at the Comunidad Campesina Juan Velasco Alvarado had been completely destroyed after a particularly extensive storm, Maritza clarified that it was still operative and actually was expanding into new ventures. Although the medicinal plant garden was de-activated, the farm is growing food plants on a small scale along with a few medicinal species. She gave us the phone number of Pablo Escobedo, whose family owns the farm. We contacted Pablo and arranged to go up to his farm the next morning.

Pablo’s friend from the neighboring private farm of Culicanda, Santos Cueva, drove us to Pablo’s farm where his parents gave us a warm welcome. His father showed us around the gardens, where they are raising trout and various endangered tree species. They have a drip-irrigation system and extensive reservoirs in case of drought. An employee of the Cusco-based NGO, Instituto para una Alternativa Agraria was present, along with four other people from the Juan Velasco Alvarado Comunidad Campesina, who were there to learn sustainable farming practices. Their goal is to promote a traditional way of life while utilizing environmentally-
friendly agricultural procedures. Furthermore, Pablo and his parents are planning to convert part of their farm into an eco-tourist destination, complete with traditional mountain lifestyle attractions and non-conventional ones like para-gliding. They are very interested in growing medicinal plants, and certainly have enough land to supply an entire clinic, if not more. Once again, we need a formal written invitation from the community.

**Recommendations**

*Research*

We understand that EsSalud has its own research center in Iquitos, the Instituto de Medicina Tradicional (INMED), which has a back-log of completed research waiting to be published. Ways need to be found to publish this valuable material in a timely fashion in order to place it in the public domain and establish a proprietary claim on behalf of the Peruvian people. Partnerships with national and international scientific institutions—in addition to enhancing research—can provide publication outlets. Also, ways and means need to be found to establish an EsSalud publication series focused on ethno-botany and ethno-pharmacology. India and China are examples of countries which are successfully following this course of action.

Another advantage of collaborative arrangements is the enhancement of the research endeavor. In this regard, in order to jump-start such collaboration, EsSalud has accepted an invitation from MHIRT- Peru to send researchers from the Iquitos research center to the National University of Trujillo lab where MHIRT is working. The objective of this exchange would be to observe ongoing microbiology, toxicity screening, and phytochemical analysis of mixtures of Peruvian medicinal plants, as well as a project that the Chemistry Department currently is conducting in the evaluation of medicinal plants for Trujillo’s CAMEC. Hopefully this modest initial contact will lead to larger collaborative ventures. At the very least it will promote an exchange of ideas and methodologies.

*Education and Community Outreach*

One of the truly impressive components of the CAMEC program is the involvement of promotores de salud in community outreach. We believe that this model can be effectively
expanded by forming alliances with other public institutions, in this case with the Ministry of Culture. As noted earlier in this report, MHIRT’s partnership with Linfield College and the Missouri Botanical Garden’s Sacred Seeds program led to the planting of a garden of medicinal plants on the grounds of the Chan Chan site museum as well as augmenting the garden at EsSalud-CAMEC in Trujillo. At present the Chan Chan garden lacks signage and is not incorporated into a docent program. However, collaborative efforts between EsSalud and the Proyecto Especial Complejo Arqueológico Chan (PECACH, under the Ministerio de Cultura) in cooperation with school teachers at Villa del Mar, the major community near the site museum might make it possible to activate this program. Thus a small step towards building the Chan Chan botanical garden as anticipated in the site’s 2010 master plan, could be taken. Discussions with Dr. Luis Fernández, EsSalud-CAMEC’s medical director and Dr. Henry Gayoso, Director of PECACH indicate a willingness to pursue this option. Further discussions need to take place with Lic. Teresa de Jesús Bravo, Director of the Dirección Desconcentrada de Cultura de la Libertad (also under the Ministerio de Cultura), which administers the Chan Chan site museum. If this mini-program is made operational, it could provide a model for a similar community outreach program at Markawamachuko near Huamachuco where we have noted that a great variety of medicinal plants grow in profusion.

Supply Chain

With regard to a supply chain of medicinal plants from Huamachuco to the Natural Pharmacy at EsSalud-CAMEC in Trujillo, the best option appears to be to re-start the garden at the Comunidad Campesina Juan Velasco Alvarado. There is enough land available for cultivation on a large scale, which is not the case at the other potential locations. The Beneficencia Pública would be more conducive to a botanical garden as was originally planned in their unfunded proposal of 2009. However, they could bring a sizeable work force (Club de Madres) of knowledgeable herbalists to the project as they did for the 2009-2011 MHIRT program.

One of the lessons learned during the original project was that the medicinal plant garden will have to be activated in harmony with specific ecological niches. In other words, high altitude plants need to be planted in their natural eco-zone as evidenced by the fact that the
ones transplanted to the lower altitude of the original garden eventually died off (the same thing happened with some plants transplanted at Chan Chan.) Plants that survived include: Aracacha, Clavel, Corontilla, Culantro, Diente de León, Escorcionera, Geranio, Huamán Ripa, Quinhual, Retama, Salvia, Sarsamora, Shayapi and Valeriana. Trees include: Aliso, Caigua, Pushiquil and Quinhual.

The most crucial variable in developing the community garden will be conservation. For it to be a success, community members will need to be trained in the proper cultivation, harvesting, and preparation techniques involving appropriate quality control and sustainable bio-agronomy. During the evaluation process, we have become aware of two projects that appear to meet all of the ecological and agricultural parameters specified by EsSalud in its *Manual de Fitoterapia*. One project is Laboratorio Huitco working in Ayacucho, which is a major supplier for Fito-Peru, the natural products company which currently is the supplier for EsSalud’s Natural Pharmacies. The other is a GTZ (EU)-funded project in Tarapoto that is destined to be the supplier for the soon-to-be-opened EsSalud-CAMEC clinic in Moyobamba. Both of these projects should be evaluated as possible organizers and trainers for the Huamachuco project, a job that is beyond the scope of the present MHIRT-Peru evaluation.

*Interface with Traditional Medicine*

Trujillo is the ideal place to develop collaborations between practitioners of traditional and complementary-alternative medical systems. Starting in 1978 and again in 1979, with the assistance of medical doctor Hernán Miranda, the famous local *curandero* Eduardo Calderón (*“Tuno”*) worked with anthropologist Douglas Sharon in teaching a course on Traditional Medicine at UNT’s Faculty of Medicine. The book *Terapia de la Curandería* (Calderón and Sharon 1978) was written especially for this course which was meant to prepare medical students for their one year of service in underserved communities in the Servicio Civil de Graduandos (SECIGRA), now known as Servicio Rural Urbano Marginal (SERUM).

In the 1990s, a book of patient case histories, *Sorcery and Shamanism: Curanderos and Clients in Northern Peru* (Joralemon and Sharon 1993) was published followed by a volume on female *curanderas*, *The Gift of Life* (Glass-Coffin 1994). Then a group of Trujillo archaeologists
organized two outdoor seminars on Traditional Medicine (Chacma 94 & 95) bringing academics and curanderos together with local authorities and the general public in order to re-value and invigorate this expression of non-material patrimony within a context of mutual respect and collaboration.

Early in the 2000s, two more seminars (Puemapé 2004 & 2005) were organized by this group of scholars. The outcome of these four encounters was an 8-point set of conclusions regarding the essential elements of curanderismo. Three of these are relevant to the interaction between EsSalud-CAMEC and Traditional Medicine, to wit:

- All interaction between traditional and conventional medicine should be realized in a context of mutual respect, especially since the former is transmitting millenary knowledge in its own territory.
- Traditional Medicine is a serious alternative for the solution of health problems given that in our society—enmeshed as it is in a globalizing world—these issues have not been resolved and new ailments have emerged. The advantage provided by Traditional Medicine is that the curandero treats the individual, his or her family, and the community collectively, searching for equilibrium in the ecological sphere and in the world in which we live.
- Curanderos and other traditional therapists (herbalists, bone setters, midwives)—as intermediaries between man and nature in correcting health imbalances—represent a living culture that has never conceded its place in society while persisting through time. It is necessary to understand that in a modernizing context curanderos should have the option to associate and integrate with each other and other medical specialists, interacting together to solve the problem of sickness and imbalance (Galvez n.d., in press).

Finally, two anthologies, Medicina Tradicional: Conocimiento Milenario (Vergara y Vásquez 2009) and Curanderismo, Medicina Tradicional (Paz Esquerre 2012)—both based on symposia which included curanderos and scholars from a variety of disciplines—have shed new light on this important topic and its continued relevance in a world of globalization and rapid
culture change. Also, UNT biologists have published a comprehensive survey of the extant literature on Peruvian medicinal plants, *Plantas Medicinales del Perú: Taxonomía, Ecogeografía, Fenología y Etnobotánica* (Mostacero et al. 2011).

From the foregoing it should be apparent that, since the late 1970s, there has been a consistent informal dialogue between traditional and modern medicine in the Trujillo region, a fact observed by experienced field researchers. This is a positive factor which could be used to strengthen EsSalud’s therapeutic interventions with patients. For example, *curanderos’* knowledge of medicinal plants could be tapped to provide leads for future research at UNT and at INMED in Iquitos, as well as assisting EsSalud pharmacists in the process of determining appropriate dosage levels for specific ailments. (In writing their book on North Peruvian ethnobotany, Bussmann and Sharon discovered that *curanderos* had a good sense for dosage levels.) They could also be consulted by EsSalud psychologists in difficult diagnoses, some of which may actually involve etiologies familiar to traditional practitioners. In their 1993 study of patient case histories, Joralemon and Sharon noted that most clients ended up seeking the services of *curanderos* only after exhausting all avenues available in conventional medicine. Finally, community education and outreach is an area where *curandero* collaboration, especially with *promotores*, would be invaluable as was the case when *curandera* Julia Calderon de Avila was consulted for the Chan Chan garden. We feel that this kind of reciprocity has much to offer.

**Conclusion**

Our evaluation of the phyto-therapy at EsSalud-CAMEC has found it to be impressive and well organized. Suggestions for enhancing the program include:

1. Seeking ways and means to publish INMED’s backlog of completed projects and to include research on plant mixtures in collaboration with UNT.
2. Forming a partnership with the Ministry of Culture and local schools to expand the demonstration garden of medicinal plants to other programs.
3. Building a sustainable, conservation- oriented supply chain of medicinal plants in cooperation with the Comunidad Campesina Juan Velasco Alvarado (Huamachuco) and an adequately vetted NGO.
4. Formalizing what until now have been informal links with practitioners of Traditional Medicine in education and outreach related to ethno-botany, pharmacy and psychology.

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