MEDICINAL PLANTS USED BY LATINO HEALERS FOR WOMEN'S HEALTH CONDITIONS IN NEW YORK CITY[1]

MICHAEL J. BALICK, FREDI KRONENBERG, ANDREANA L. OSOSKI, MARIAN REIFF, ADRIANE FUGH-BERMAN, BONNIE O'CONNOR, MARIA ROBLE, PATRICIA LOHR, AND DANIEL ATHA

Balick, Michael J. (*Institute of Economic Botany, The New York Botanical Garden, Bronx, NY 10458*), **Fredi Kronenberg** (*The Center for Complementary and Alternative Medicine (CAM), Research in Women's Health, and Rosenthal Center for CAM, Columbia College of Physicians and Surgeons, Columbia University, New York, NY 10032*), **Andreana L. Ososki** (*The City University of New York Graduate School and Institute of Economic Botany, The New York Botanical Garden*), **Marian Reiff** (*The Center for Complementary and Alternative Medicine, Columbia College of Physicians and Surgeons, Columbia University, New York, NY 10032*), **Adriane Fugh-Berman** (*Dept. of Health Care Sciences, George Washington University, School of Medicine and Health Sciences, 2150 Pennsylvania Avenue, #2B–417, Washington, DC 20037*), **Bonnie O'Connor** (*MCP Hahnemann School of Medicine, Philadelphia, PA 10102*), **Maria Roble** (*The Center for Complementary and Alternative Medicine, Columbia College of Physicians and Surgeons, Columbia University, New York, NY 10032*), **Patricia Lohr** (*University of Southern California School of Medicine*), **and Daniel Atha** (*Institute of Economic Botany, The New York Botanical Garden, Bronx, NY 10458*). MEDICINAL PLANTS USED BY LATINO HEALERS FOR WOMEN'S HEALTH CONDITIONS IN NEW YORK CITY. *Economic Botany 54(3):344–357, 2000.* *This paper examines the use of medicinal plants by Latino healers in New York City to treat various women's illnesses. Eight Latino healers collaborated on the study through consultations with female patients who had one of the following conditions as diagnosed by biomedically trained physicians: uterine fibroids, hot flashes, menorrhagia, or endometriosis. The study identified a total of 67 plant species prescribed by the healers in the form of mixtures or as individual plants. Voucher specimens were collected from local* botánicas *and identified by specialists at The New York Botanical Garden. Studies of immigrant traditional healers and the plants they use in an urban setting can provide interesting ethnobotanical data and information to assist in diagnosing conditions and contributing to treatment of patients from Latino as well as non-Latino communities.*

PLANTAS MEDICINALES USADAS POR CURANDEROS LATINOS EN EL TRATAMIENTO DE ENFERMEDADES FEMENINAS EN LA CIUDAD DE NUEVA YORK. *Este documento examina el uso de plantas medicinales por curanderos Latinos en la ciudad de Nueva York en el tratamiento de varias enfermedades en mujeres. Ocho curanderos Latinos colaboraron en el estudio a través de consultas con pacientes mujeres que tenían una de las siguentes condiciones de salud diagnosticadas por médicos: fibroma del útero, incrementos de temperatura repentinos, menorrea o endometriosis. El estudio identificó un total de 67 especies de plantas prescritas por los curanderos ya sea en mezclas o individualmente. Muestras de los especímenes fueron colectadas en botánicas locales e identificadas por especialistas en El Jardín Botánico de Nueva York. Estudios de curanderos tradicionales inmigrantes y sus plantas en un área urbana pueden proveer datos etnobotánicos interesantes e información que asista en el diagnóstico del estado de salud y contribuya al tratamiento de pacientes tanto de comunidades Latinas, como no Latinas.*

Key Words: ethnomedicine; ethnobotany; women's health; uterine fibroids; menorrhagia; endometriosis; hot flashes; Latino.

Traditional medical practices are an important part of the primary health-care delivery system in much of the developing world (Akerele 1988; Bodeker 1994; Cunningham 1993; Sheldon, Balick, and Laird 1997:5). According to the World Health Organization, an estimated 3.5 billion people in the developing world depend on plants

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as part of their primary health care (Balick and Cox 1996:57–58). Nonbiomedical healing systems vary across cultures but conceptually they often focus on balance and harmony, which may be treated mentally, physically, or spiritually (Bodeker 1994; Hewson 1998; O'Connor 1998). Biomedical treatment systems are often conceptually different than traditional systems focusing on Cartesian dualism, where body and mind are treated separately and technological and surgical procedures are often used for the treatment of physical diseases (Bodeker 1994; Hewson 1998). In many countries, the acceptance of traditional medicine by governments as a formal component of health care has been slow, except perhaps in Asia and Europe. In China, for example, for over three decades there has been an integration of traditional medicine into the national health-care system (Akerele 1988; Bodeker 1994). In urban settings such as New York City, immigrant communities use traditional health-care practices often exclusively or in addition to conventional biomedical treatment (O'Connor 1998). Interest in receiving such traditional care may be in response to different concepts of disease that are not recognized by biomedically trained physicians (O'Connor 1998). Traditional medicinal treatments often provide culturally familiar techniques that treat both the physical and spiritual condition of an individual (Bodeker 1994; O'Connor 1998; Pachter 1994).

Globally, about 85% of the traditional medicines used for primary health care are derived from plants (Farnsworth 1988:91). As people leave their native surroundings and migrate to urban centers, they bring their medical traditions with them (Baca 1978; Gordon 1994; O'Connor 1998). In New York City, immigrant peoples continue to import, buy, sell, and utilize herbs and other traditional remedies to serve their own ethnic communities. Much of the current work in ethnobotany is concerned with the loss of traditional knowledge and the preservation of biological diversity in remote parts of the world where cultures and their ecosystems are being destroyed by development. However, by recognizing the widespread use of plants as medicine by ethnic communities in urban centers, interesting ethnobotanical studies can be designed for this environment. The results can be used to help biomedically trained physicians improve the success of health-care delivery to these ethnic groups in culturally appropriate ways (Dominican, Chinese, Indian, Korean, etc.) (Gordon 1994; O'Connor 1998; Pachter 1993, 1994). In addition to learning about the uses of medicinal plants in a new setting, often in combination with biomedical modalities, their potential for therapeutic benefit can also be evaluated.

Within Latino communities of New York City, the *curandera/o* (healer), the *espiritista* (spiritist healer), and the plants they use are part of everyday life for many people. In these communities the *botánica* (Figs. 1, 2) a shop selling traditional remedies, has the role of herbal pharmacy, providing fresh and dried herbs, mixtures and tinctures, as well as religious and ritual items such as candles and sacred waters (Borello and Mathias 1977; Delgado and Santiago 1998). Some of these herbs are imported from the Dominican Republic, Peru, and Brazil, whereas others are grown locally in the state of New York.

This paper focuses on the plants used by a group of Latino healers as part of an on-going study on herbal therapies for women's health. The plants were prescribed by healers to treat women who had one of the following conditions previously diagnosed by a biomedically trained physician: uterine fibroids (benign connective tissue tumors); menorrhagia (excessive uterine bleeding); endometriosis (growth of endometrial tissue outside of the uterus) or hot flashes (sudden brief sensations of heat often experienced during menopause). We will discuss: 1) the methods we developed to collect ethnobotanical data in the urban environment, 2) the healers' backgrounds, 3) the plants prescribed for uterine fibroids, menorrhagia, endometriosis, and hot flashes, the frequency of the plants in prescriptions, the healers' methods of collection, the commonalities between healers and, 4) the benefits of such research in relation to the goals of ethnobotany as a discipline and to health care for women and immigrant communities.

Methods

The project, Ethnobotany in the Urban Environment involves work with healers from Latino and Chinese communities in New York City, although this paper focuses specifically on the Latino healers and their plants. Healers were identified through community networks and interviewed extensively about their traditional practices. Those who treated a substantial number of

Fig. 1. A popular botánica in New York City frequented by several of the healers involved in this project.
Fig. 2. Inside the botánica, fresh and dried plants sold beside perfumes and religious goods. Photos by Christine Douglas.

women patients and used plants as part of their healing practices were selected to participate in the study (Reiff et al. 1996). The Institutional Review Board of Columbia University, College of Physicians and Surgeons (IRB) granted permission for the study. Each patient and each healer in the study signed a formal consent in adherence with IRB rules and regulations.

Patients selected were women from various cultural backgrounds, who had been diagnosed by a physician (MD) with either menorrhagia, endometriosis, hot flashes, or uterine fibroids. The patients responded to advertisements posted in the New York City area requesting research subjects with the specific women's conditions. During the study each Latino healer was to have a consultation with each patient, although based on uncontrollable circumstances, not all healers met with each patient. One healer saw as few as two patients whereas two other healers saw as many as ten patients. The other five healers saw between two and ten patients each. One fibroid patient, FB002, was seen twice by two of the healers—once in 1996 and then again in 1998. She is considered as two patients, because she received different prescriptions at each consultation.

A traditional healer, a patient, and two researchers were present at each consultation. Consultations were conducted at The Center for Complementary and Alternative Medicine at Columbia University or at the healer's homes or offices at convenient times for all participants, often on weekends and evenings. Consultations were conducted in either Spanish or English depending on the healer's preference. Patients' and healers' names were coded to maintain confidentiality.

There were two phases of the study. In the first phase, we worked with Latino healers from various parts of Latin America and included patients with all four health conditions listed above. The second phase narrowed the research to healers from the Dominican Republic and patients with uterine fibroids. This is one of a series of papers being written on methodology, the results, conclusions, and applicability of this research. Another paper will also consider the response of the patient to different healers and healing systems, and the comfort level among healers and patients of different ethnic backgrounds and healing systems.

The healers examined the patients using the diagnostic techniques from their own medical systems (e.g., urine analysis, energy) and prescribed their own treatments. The patients were asked not to take the treatments prescribed by the healer in order to increase the likelihood that their symptoms remained consistent for evaluation by the other healers and because permission for this action was not obtained from the IRB. The recommended treatments usually consisted of medicinal herbs, but also included massage and/or other therapies. After the healer had seen a patient, a follow-up interview was conducted covering the plants prescribed by the healer.

The plant interviews were conducted at the healer's home, at his/her workplace or, occasionally, at Columbia University. Only the healer and researchers were present during the plant interviews. Specific questions were asked about each plant prescribed, such as the part of the plant used, preparation, the effect of the plant on the patient, any other uses of the plant, and any conditions or times when the plant should not be used medicinally. Questions were also asked about the nature of the plant material, such as, where is the plant collected, what is its natural habitat and its stage of development at the time of collection. The healers were also queried on the time of the day specific plants are collected, the effect of the moon on collection, if any, and whether rituals are performed at the time of collection. Lastly, questions were asked about the source of the plant in the urban setting as well as its cost. The plants were either purchased at a botánica or at local markets with the healer, or were purchased alone by the researcher and brought to the plant interview to verify the identity of each collected plant with the healer. Because the botánicas primarily sell the plants by their common name, it is important to have the healers confirm the identification of the plants.

After the plant interviews were completed, the botánica where the healer typically buys his/her plants was visited to learn more about the origin of the specific plants prescribed. These visits consisted of informal conversations, typically in Spanish, with the staff persons at the botánica, aimed at understanding more about the origin of the plants, their collection methods, and how they were shipped to New York City.

The plants prescribed by the healers were purchased by the researchers, identified by the healers, and prepared as voucher specimens, with scientific names determined by specialists at The

Fig. 3. An altar commonly seen in a healer's workplace, which is an important part of healing rituals.

New York Botanical Garden. Some uncertainty of identification remained if only plant fragments were collected: for example, only the root or a bag of crushed leaves, as opposed to a whole plant. All fresh plant specimens collected from the botánicas and local markets were pressed, dried, and catalogued into a database at the Institute of Economic Botany and deposited at The New York Botanical Garden Herbarium (NY).

Results and Discussion

In this paper we present: profiles of the healers; an analysis of the healer-patient distribution of consultations; a table of the medicinal plants prescribed by the healers for all four women's health conditions; the frequency of plants prescribed by the healers; and the methods of collection used by the healers and two botánicas.

Healer Profiles

The study included eight healers, six women from the Dominican Republic and two men (one from Puerto Rico and the other from Colombia). A summary of their diverse backgrounds and diagnostic methods follows. Some healers, such as HS009, HS010, and HS014, have lived in the United States for over 30 years, whereas others have lived here less than 10 years. The language ability varies from speaking only Spanish to fluency in both English and Spanish. These factors may influence the types of plants prescribed by the healer.

HS009. This healer is originally from Puerto Rico and has been living in the United States for 51 years. He is fluent in both English and Spanish. He calls himself an espiritista and works in a botánica in New York City. His knowledge of plants was learned from his mother, a healer in Puerto Rico, as well as through books. His treatments consist of prayer, herbal teas and baths, diet, and exercise.

HS010. This healer is from the province of Restauración, located in the Northwest region of the Dominican Republic near Haiti. She has been living in the United States for about 30 years and is fluent in English and Spanish. She calls herself a "facilitator of good health" and works from her home. At the age of 14 her aunt, who is a curandera and espiritista, passed on the spiritual part of becoming a healer through a special ritual. In her practice, she employs herbs as well as meditation, exercise, diet, aromatherapy, candles, and prayers (Fig. 3).

HS013. This healer travels extensively in South America and between New York and Florida. He was born in Colombia and has been healing since he was five years old. He calls himself a curandero. He speaks Spanish and his method of diagnosing patients involves looking at the patient's body through a glass of water to "see" the illness. His prescriptions consist of herbal teas, baths, and vaginal douches.

HS014. This healer is from Santo Domingo, Dominican Republic. She has been living in the United States for about 30 years and speaks English and Spanish. She does not call herself a professional healer, although she has been treating people since she was seven years old. She became a healer because of a dream she had in which her grandmother told her she had the ability to heal. Her grandmother died that night. She uses prayer, herbs, and massage to treat her patients and says that her belief in Jesus is her source of healing ability.

HS015. This healer is from the Dominican Republic. She has been living in the United States for eight years and works in a botánica in New York City. She speaks Spanish and her knowledge of plants came from her mother. She considers herself a "naturalist" who is knowledgeable about plants and enjoys helping others. Her treatments consist of herbal teas, baths, and vaginal douches.

HS019. This healer is from the Dominican Republic and speaks Spanish. She has been in the United States for three years and practices as a healer at her home, seeing around 20 clients a week. She learned about the use of plants through her mother and grandmother who were both curanderas. Her treatments consist of herbal teas and modifications of her patient's diet.

HS020. This healer has been in the United States for 10 years and speaks English and Spanish. She is originally from the Dominican Republic where she learned about the use of plants from her grandmother and great grandmother. She consults with patients in her home. Her diagnosis involves the examination of urine and the majority of her treatments are herbal teas.

HS021. This healer left the Dominican Republic at the age of 23. She lived in Venezuela and Puerto Rico before moving to the United States. Her use of plants was learned primarily from her grandmother. She also receives spiritual guidance, as did her grandmother, that helps her in healing her patients. She speaks Spanish and consults with patients at her home. Her treatments usually consist of herbal teas and she uses the examination of urine to determine the necessary treatment for her patient.

Healer-Patient Distribution

There were 13 patients involved in the study. Of those, eight had previously been diagnosed by biomedical practitioners with uterine fibroids; two with hot flashes; two with menorrhagia; and one with endometriosis. Among the eight healers, healers HS010 and HS014 each saw ten patients; healer HS009 saw six patients; healers HS020 and HS021 each saw five patients; healer HS015 saw four patients; healer HS013 saw three patients; and healer HS019 saw two patients. There were a total of 45 consultations; 34 with uterine fibroid patients, four with hot flashes patients, six with menorrhagia patients, and one with an endometriosis patient. There were more uterine fibroid patients seen by the healers than those with the other conditions, which may impose bias on the distribution of plant species by condition.

Medicinal Plants Prescribed by Healers

Table 1 lists the plants prescribed by the Latino healers for uterine fibroids, hot flashes, and menorrhagia including the vernacular name used by each healer. Some of the healers referred to the plants in Spanish whereas others used English. Although endometriosis was included in the study, no healer ever prescribed plants for this condition. Voucher numbers for all collections, made by Andreana Ososki (AO), are listed in parentheses following the plant family and deposited at NY.

As many as 74 and not less than 67 species were prescribed by the Latino healers (five are undetermined and two are determined to family, see Table 1). Some plants are listed with the family name only as the voucher consists of small fragments (e.g., roots) making a positive identity extremely difficult. Four other taxa are listed with only vernacular names, *buzunuco, cajollo de yuca, espigelia,* and *yarumo* because it was not possible to collect voucher specimens.

One species *Doyerea emetocathartica* (Cucurbitaceae) is known by three names, *batata de burro, batata zandumbia,* and *batata zambomba.* According to one of the Dominican healers, batata zandumbia and batata de burro are "almost"

TABLE 1. PLANT SPECIES PRESCRIBED BY LATINO HEALERS FOR THE TREATMENT OF UTERINE FIBROIDS, HOT FLASHES, AND MENORRHAGIA.

Species [family] {voucher number}	Vernacular name	Condition[1]
Achillea millefolium L. [Asteraceae] {AO 7}	mil en rama	m, uf
Agave sp. [Agavaceae] {AO 12, 14, 47, 48, 49, 57, 62}	maguey de bestia	uf
Aloe vera (L.) Burm. f. [Asphodelaceae] {AO 77}	sábila	uf
Ambrosia peruviana Willd. [Asteraceae] {AO 24}	artemisa, altamisa	uf
Ananas comosus (L.) Merr. [Bromeliaceae] {AO 102}	guarpo, pineapple	hf, uf
Anisum vulgare Gaertn. [Apiaceae] {AO 63}	anís	m, uf
Apium graveolens L. [Apiaceae] {AO 93}	celery	uf
Argemone sp. [Papaveraceae] {AO 26, 52, 59, 111}	cardo santo	uf
Beta vulgaris L. [Chenopodiaceae] {AO 95}	beet, remolacha	m, uf
Bixa orellana L. [Bixaceae] {AO 39, 43}	bija	uf
Caesalpinia coriaria (Jacq.)Willd. [Fabaceae] {AO 60}	guatapanal	uf
Cassia fistula L. [Fabaceae] {AO 50}	cañafístula	uf
Chamaemelum nobile (L.) All. [Asteraceae] {AO 5, 30, 32, 65, 68}	manzanilla, chamomile	m, uf
Chenopodium ambrosioides L. [Chenopodiaceae] {AO 3, 23, 27}	apasote, epazote	uf
Chiococca alba (L.) Hitchc. [Rubiaceae] {AO 105}	timacle	uf
Citrus sp. [Rutaceae] {AO 79, 99, 116}	orange, limón	hf, uf
Coccothrinax argentea (Lodd. ex Shult. & Schult. f.) Sarg. ex Becc. [Arecaceae] {AO 106}	cana	uf
Daucus carota L. [Apiaceae] {AO 97}	carrot	uf
Doyerea emetocathartica Grosourdy [Cucurbitaceae] {AO 82, 109}	batata zandumbia, batata de burro	uf
Equisetum giganteum L. [Equisetaceae] {114}	cola de caballo	uf
Eucalyptus sp. [Myrtaceae] {AO 4, 18, 20}	eucalipto	uf
Fevillea cordifolia L. [Cucurbitaceae] {AO 72, 75}	ayamo, jayamo, jallamo	uf
Ficus religiosa L. [Moraceae] {AO 78}	álamo	uf
Genipa americana L. [Rubiaceae] {AO 36}	jagua	hf
Gouania lupuloides (L.) Urb. [Rhamnaceae] {AO 84}	bejuco indio	uf
Guazuma ulmifolia Lam. [Sterculiaceae] {AO 73}	guácima	uf
Helichrysum italicum (Roth) G. Don f. [Asteraceae] {AO 85}	siemprefresca	uf
Illicium verum Hook. f. [Illiciaceae] {AO 64}	anís de estrella	uf
Kalanchoe gastonis-bonnieri Raym.-Hamet & H. Perrier [Crassulaceae] {AO 45}	mala madre	uf
Lavandula angustifolia Mill. [Lamiaceae] {AO 41, 66}	algucema	uf
Malus pumila Mill. [Rosaceae] {AO 98}	apple	hf
Mentha sp. [Lamiaceae] {AO 22}	yerba buena	uf
Momordica charantia L. [Cucurbitaceae] {AO 54}	cundeamor	uf
Musa x paradisiaca L. [Musaceae] {AO 101}	plátano	uf
Myrsine sp. [Myrsinaceae] {AO 104}	palo santo	uf
Opuntia ficus-indica (L.) Mill. [Cactaceae] {AO 40, 46}	tuna, alquitira	m, uf
Panax pseudoginseng Wall. [Araliaceae] {AO 112}	ginseng	uf
Petiveria alliacea L. [Phytolaccaceae]{AO 1, 10, 11, 15, 53, 89, 90}	anamú	m, uf
Petroselinum crispum L. [Apiaceae] {AO 92}	parsley	uf
Phoenix dactylifera L. [Arecaceae] {113}	palma	uf
Pimpinella anisum L. [Apiaceae] {AO 88}	anís	m, uf
Pinus caribaea Morelet [Pinaceae] {AO 71, 76}	cuaba	uf
Piper marginatum Jacq. [Piperaceae] {AO 2, 33, 91}	anís	uf
Plantago major L. [Plantaginaceae] {AO 8, 25}	llantén, yantén	m, uf
Pluchea carolinensis (Jacq.) G. Don [Asteraceae] {AO 80}	salvia	uf
Psidium guajava L. [Myrtaceae] {AO 107}	hoja guayaba	uf
Rosa sp. [Rosaceae] {AO 83}	rose petals	uf
Rosmarinus officinalis L. [Lamiaceae] {AO 19, 86}	romero	uf
Ruellia tuberosa L. [Acanthaceae] {AO 51, 69}	periquito, guaucí	uf
Ruta chalapensis L. [Rutaceae] {AO 17, 21, 37}	ruda	m, uf

TABLE 1. CONTINUED.

Species [family] {voucher number}	Vernacular name	Condition[1]
Saccharum officinarum L. [Poaceae] {AO 42}	molasses, miel de pulga	m, uf
Securidaca virgata Sw. [Polygalaceae] {AO 38, 70}	maraveli	uf
Senna alexandrina Mill. [Fabaceae] {AO 74}	hoja madre	uf
Senna ligustrina (L.) H.S. Irwin & Barneby [Fabaceae] {AO 44}	sen	uf
Solanum melongena L. [Solanaceae] {AO 96}	baby eggplant	uf
Solanum tuberosum L. [Solanaceae] {AO 118}	papa	uf
Spermacoce verticillata L. [Rubiaceae] {AO 16, 55, 67, 110}	juana la blanca	uf
Spinacia oleracea L. [Chenopodiaceae] {AO 115}	spinach	uf
Tabebuia impetiginosa (DC.) Standl. [Bignoniaceae] {AO 35}	palo de arco	uf
cf. *Taraxacum officinale* Weber [Asteraceae] {AO 61}	diente de león	uf
Tilia mandshurica Rupr. & Maxim. [Tiliaceae] {AO 6, 29, 34}	tilo	hf, m, uf
Tournefortia gnaphalodes (L.) Roem. & Schult. [Boraginaceae] {AO 9}	planta marina	uf
Uncaria tomentosa (Willd. ex Roem. & Schult.) DC. [Rubiaceae] {AO 81}	uña de gato	uf
Vaccinium macrocarpon Aiton [Ericaceae] {AO 100}	cranberry	uf
Zea mays L. [Poaceae] {AO 94, 108}	barba de maíz	uf
Zingiber officinale Roscoe [Zingiberaceae] {AO 58}	ginger, jengibre	hf, uf
Zingiber zerumbet (L.) Sm. [Zingiberaceae] {AO 56}	jengibre amargo	uf
[Asteraceae] {AO 31}	artemisa, altamisa	uf
[Lamiaceae] {AO 28}	yerba buena	uf
undetermined {AO 103}	palo brasil	uf
no voucher	buzunuco	uf
no voucher	cajollo de yuca	uf
no voucher	espigelia	uf
no voucher	yarumo	uf

[1] Data in the Condition column is abbreviated: hf = hot flashes; m = menorrhagia; uf = uterine fibroids.

the same plant whereas in the botánica, batata zandumbia is known as batata zambomba or as batata de burro. In Liogier (1974:141–142; 1986:304), batata zandumbia, batata de burro, and batata zambomba refer to the species *Doyerea emetocathartica.* In this study both batata de burro and batata zandumbia were prescribed and were considered to be the same species.

Agave sp., one of the plants most frequently prescribed by the healers, is notoriously difficult to identify from dried material, combined with the fact that several species are native to the Dominican Republic. It is likely that several *Agave* species are harvested and sold for the medicinal plant trade. The material purchased in New York City may also be from cultivated plants in the Dominican Republic or perhaps elsewhere. Therefore we were unable to offer a positive identification of the voucher specimens collected of *Agave.*

Healers and researchers are faced with unusual challenges while collecting medicinal plants in an urban environment. Botánicas may not always sell the plant or part of the plant needed by the healer or different common names may be used for the same plant species. Common names can and do differ between or even within countries, and can also differ on individual city blocks or even in individual shops. Their distinction is of concern for patients buying medicinal plants by common names. In addition, with only plant fragments or parts of the plants available, it is a challenge for researchers to determine the species of the plant. Some samples consist of ground leaves or flowers, wood or roots. These samples are difficult to identify because there is little reliable comparative material. Herbaria are full of pressed leaves, fruits and flowers, but few contain wood or root samples. Differences in common names, and the fact that the plant can appear in so many forms (e.g., fresh, dried, fragments) can impede fieldwork in urban markets.

The plants prescribed by the healers for uterine fibroids (Table 1) comprise the highest number of species (65 species not including the five

undetermined specimens and the two specimens determined to family). Eleven plant species were prescribed for menorrhagia and six species for hot flashes. The distribution of plant species is due to the larger number of consultations for uterine fibroids versus the other two conditions, menorrhagia and hot flashes, which each have under 10 consultations. There also may be a larger number of plant species for uterine fibroids due to the number of healers prescribing plants for uterine fibroids versus the other two conditions. All eight healers saw at least one uterine fibroid patient whereas four of the healers saw at least one menorrhagia patient and three of the healers saw at least one patient with hot flashes.

The plants prescribed most commonly among the healers for uterine fibroids were *Agave* sp., *Kalanchoe gastonis-bonnieri,* and *Petiveria alliacea.* Each of these plants was prescribed by four of the eight healers. The following species were used by three of the eight healers to treat uterine fibroids: *Aloe vera, Argemone* sp., *Beta vulgaris, Chamaemelum nobile, Saccharum officinarum, Spermacoce verticillata,* and *Uncaria tomentosa.* Healers HS010 and HS014 both prescribed *Chamaemelum nobile* and *Tilia mandshurica* to treat menorrhagia.

The distribution of plant species may also be due to the individual condition. Uterine fibroids may need to be treated with mixtures that contain a larger number of plants than menorrhagia or hot flashes. This will be considered in greater detail in future papers.

Frequency of Plants Prescribed by the Healers

Figure 4 illustrates the frequency with which a plant was prescribed by the healers during the study. Only those plants that were prescribed more than four times appear in the graph. The most frequently prescribed plant among the healers was *Agave* sp. Out of 45 consultations this plant was prescribed a total of 21 times. It was a plant employed by four of the eight healers. The second and third most frequently prescribed plants were *Saccharum officinarum* and *Beta vulgaris.* These two plants were always used together in a mixture. Three of the eight healers prescribed this mixture for uterine fibroids and healer HS014 also prescribed this mixture for menorrhagia.

Agave spp. are used to make tequila and mescal, as well as being an important source of fiber, and are also used medicinally (Simpson and Ogorzaly 1995:501). In Morton (1981:87–89) there are many cited medicinal uses of *Agave* spp. in Central America and the Caribbean: one species, *Agave cocui* Trel. has been used as a poultice to drain and shrink tumors whereas another species, *A. vivipara* L. has been reported to have been used as an emmenagogue, and *A. cocui* contains steroidal sapogenins; tigogenin, and hecogenin. Hecogenin from *A. sisalana* is used commercially as a source of cortisone (Dewick 1997:246; Morton 1981:87–88).

Beta vulgaris and *Saccharum officinarum* appears to be a popular mixture among the Dominican healers to treat uterine fibroids. Two of the healers reported this mixture as being important to shrink fibroids. Another healer prescribed *Agave* sp. to reduce the fibroid and then prescribed the *B. vulgaris* and *S. officinarum* mixture to strengthen and fortify the uterus after the fibroid had been drained from the body. The fact that some plants are frequently prescribed may suggest potential leads for investigating alternative treatments for uterine fibroids, menorrhagia, and hot flashes. In a future paper, we will report on the chemical and biomedical literature to determine known constituents and chemical activity of the plants identified in this study.

Methods of Collection

The collection methods for one of the plants prescribed, *Chamaemelum nobile* is compared among four healers and two botánicas in Table 2. Information was gathered about harvest relative to the time of day, the phases of the moon, and the collector to understand if these factors are considered to contribute to the healing ability of the plant.

The plant parts collected are the same for the healers and botánicas, except for healer HS010, who reported that she would also collect the roots of *Chamaemelum nobile* for severe cases of menorrhagia if she were living in the Dominican Republic, although in New York City she cannot typically buy the roots at a botánica. Healers HS010, HS014, and HS021 all agree on collecting the plant in the morning. Healers HS010 and HS021 also collect the plant in the late afternoon. Healer HS015 suggests that the plant can be collected anytime. Only healer HS010 said the moon phase had an effect on the plant collected. Although healer HS014 said the

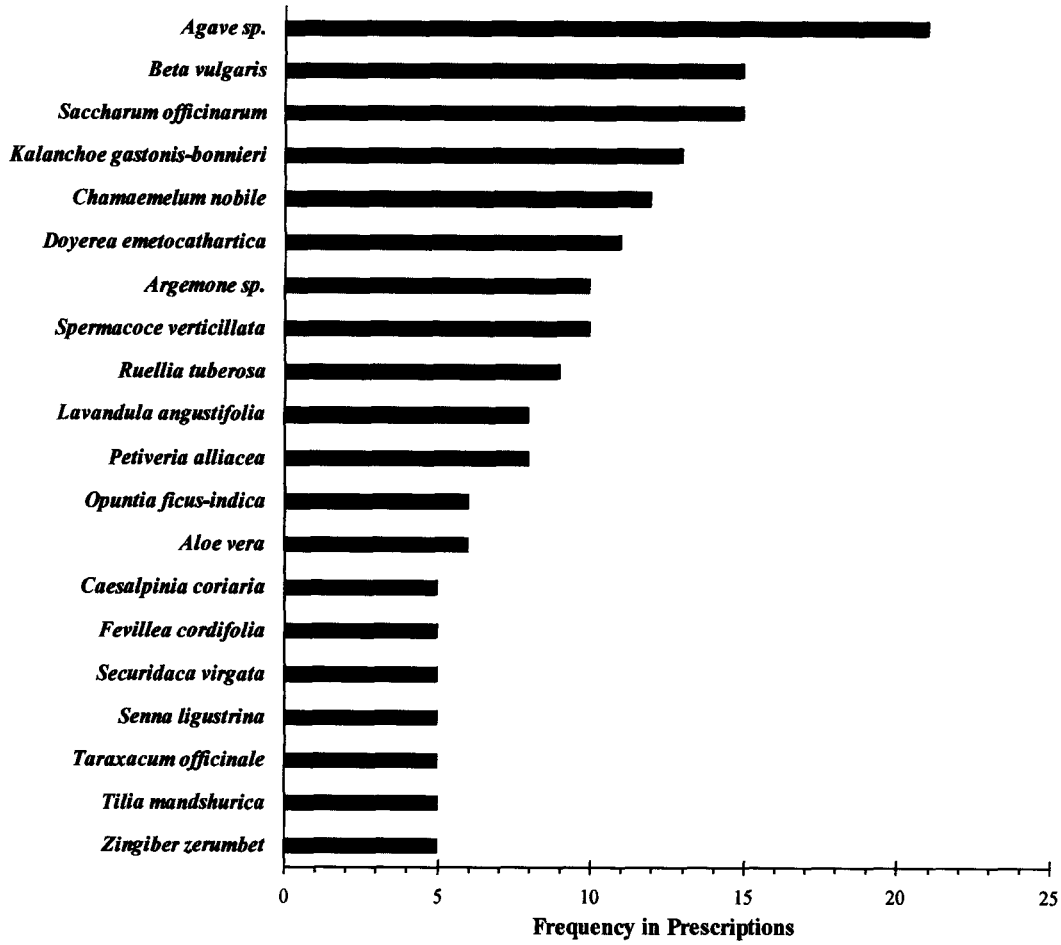

Fig. 4. The most frequently prescribed plant species for the three conditions studied (uterine fibroids, hot flashes, menorrhagia).

moon does not have an effect when *C. nobile* is collected, she does believe the moon affects people and, therefore, those who are taking this plant. She remembers her grandmother telling her that medicinal plants should not be collected during the new moon. The idea that plants should not be collected during the new moon is also reported in Hernández Colón's work (1976/

TABLE 2. COLLECTION METHODS FOR *CHAMAEMELUM NOBILE*.

Healer/botánica	Parts collected	Collecting times	Effect of moon	Who collects plants?
HS010	leaves, flowers, roots	morning and late afternoon	on full moon plants have more energy	oldest in house, women, men healers
HS014	leaves, flowers	morning	none	anyone
HS015	leaves, flowers	anytime	none	anyone
HS021	leaves, flowers	morning and late afternoon	none	anyone
botánica 1	leaves, flowers	anytime	none	anyone
botánica 2	leaves, flowers	anytime	none	anyone, usually farmers

77) in the Dominican Republic province of Pedernales.

Healer HS010 was the only one to specify who collects the plant. She also believes some people are known to have "bad hands" and they should not collect plants because they can cause harm to them. She believes this is true for all medicinal plants.

From Table 2 it appears that methods of collection are healer-specific rather than being specific to individual plants or to the botánicas. Shopkeepers at both botánicas agreed that anyone can collect *Chamaemelum nobile*—usually farmers collect it without regard to the time of day and moon phase. According to a staff person at one of the botánicas, the methods of collection are oriented purely toward business—anyone can collect any of the plants, at any time of the day. The only exception he noted was *Ruta chalapensis,* which he indicated should not be collected during the new moon, an idea also reported by healer HS014 and in Hernández Colón's work (1976–1977).

Through interviews with the healers and the shopkeepers at the botánicas, additional information not presented in Table 2 was also gathered about the methods of collection. Healer HS010 noted that all plants should be collected during the "calm time," early in the morning or later in the afternoon between 4 P.M. and 5 P.M., out of respect for the plant. The heat of the day (between noon and 3 P.M.) is said to be the worst time to collect, because plants are sensitive to the heat, which lessens their healing power. For healer HS010, midnight is the time when plants are collected for special treatments. According to healer HS014, plants should not be collected at night because that is when they are resting. Healer HS014 also reported that anyone can collect medicinal plants except for *Ruta chalapensis,* which cannot be collected by women during menstruation.

Before collecting medicinal plants, both healers HS010 and HS014 perform a ritual. Healer HS010 usually sings to bless the plant and nature. She learned songs as a child from her grandmother. She said there is a different song for each type of plant. One of the songs is about women orange collectors who become so immersed in their singing that they forget to collect the oranges. Other collectors arrive and take all the oranges while these women are singing, so they are left with only branches. The use of prayers and other orations during plant collection is not uncommon in Latin America (Arvigo and Balick 1998:10).

Healer HS014 asks the plant for forgiveness before picking it and then asks it to help her heal the patient. She then thanks the plant. She reports that it is better if the plants are organic. Healer HS014 buys fresh plants from the botánicas, because she does not trust the dried plants, as they could be mixed with other plants or have been touched by evil spirits or by someone practicing *Santería,* a syncretic Afro-Caribbean religion.

Because the Dominican Republic has a subtropical climate, the healers collect the plants throughout the year as needed for healing. According to most of the healers, out of respect for the plant, the plants should be collected at a mature stage.

According to Hernández Colón (1976/77), in the province of Pedernales, all plants traditionally have a specific time and method for collection that is as important as the actual preparation of the plants. As people have become more detached from the natural environment, this knowledge has been lost. In this study, however, it was observed that some of the traditional methods of collection are still remembered by healers. As most of the plants are bought at botánicas, the methods of collection are not in practice in New York City.

Conclusion

This study offers a model for studying the relationships between plants and people, within the context of traditional medical systems in an urban setting. The results illustrate the plants prescribed by Latino healers for the four conditions, the various diagnostic techniques employed by the healers, and the different methods of collection used by the healers and the botánicas. This study generated a broad spectrum of information concerning medicinal plants used by Latino healers considering the small sample size. The results from this study show the potential of this model employing a larger sample size.

We observed that the patients were comfortable during the consultations with the healers, even when those patients were outside the healer's culture. Two of the patients returned to the healer for treatment following this study; future research will report on their results. In addition, information collected from the transcripts of the

healer/patient interviews offers perspective from the patients' experience. One patient, an anatomy and physiology research scientist in New York City, often asked many questions, particularly about the functioning of the herbs and showed great interest in how the healers learned about the use of the plants. Future papers will examine more closely the patients' experience with the various healers and their treatments.

There is growing interest in traditional practices of health care as a complement to biomedical health care (Astin 1998; Eisenberg et al. 1993, 1998). With this changing behavior it is important for biomedically trained practitioners to understand the use of herbs and the possible synergistic effects or other herb-drug interactions with pharmaceutical prescriptions (Miller 1998). The potential interactions of plants as herbal medicines with pharmaceutical medications is poorly understood, and there are few studies on this subject (Eisenberg et al. 1998; Miller 1998). Contraindications and occasional cases of toxicity based on misuse are important issues of traditional medicine to be considered when using herbs.

There are significant, but somewhat parallel systems of health care providing needed services to people in New York City. These systems, although specific to given ethnic groups, have similar foundations based on long standing traditions (O'Connor 1998). Immigrants bring with them their own health systems and treatments that are familiar and have proven effective based on generations of use (Baca 1978; Bodeker 1994; Gordon 1994; O'Connor 1998). The use of familiar health care is conditioned by family member's views on health and by other cultural factors that may not transfer from one culture to another (Akerele 1988; Pachter 1994). Culturally specific disease concepts of immigrant communities may not be understood by biomedically trained doctors and, therefore, many in those communities are drawn to their own health-care practitioners (Kraut 1990; O'Connor 1998; Pachter 1994). Health care provided by traditional healers such as the espiritista and curandera/o is often more affordable than services provided at local clinics and hospitals (Bodeker 1994). The consensus of the healers in the study was that their traditional treatments were effective and that many people return to see them when they had other problems.

There is increased interest in the United States population in using a low technology approach to healing; this is especially the case with women's health, because biomedical treatment for women's health problems is perceived as involving invasive treatments such as surgeries and hormones, which many patients find undesirable (Gordon 1994; O'Connor 1998; Pachter 1993, 1994). To understand the therapeutic potential of other medical systems, there is a need for more studies of traditional health-care practices, as well as clinical research. The results from this study can offer a potential model for future studies of traditional health-care practices in communities around the country.

Although many ethnobotanical studies are conducted in remote regions of the world, there is a wealth of information that can be learned from working with immigrant communities in large cities (Gordon 1994; Kendall 1987; Kraut 1990; O'Connor 1998; Pachter 1993, 1994; Ramakrishna and Weiss 1992). Studies in urban settings require an awareness and understanding of the limits of a city environment. For example, due to strict government regulations in the United States, healers often feel hesitant to identify themselves openly. Challenges for the investigator include understanding the mechanisms of how the plants are brought to the cities, because not all the plants arrive by legal means. A different set of skills is needed to work in a city versus a rural area, such as the ability to work with plant fragments far removed from their natural environment, and skills to carry out this research in diverse ethnic communities. We consider this category of research to be urban ethnobotany as it is somewhat different from ethnobotanical research conducted in remote regions.

Urban ethnobotany is often supported by the healers and the community because it maintains and gives value to cultural ties. There is a dynamic exchange of plants and knowledge among cultures that provides urban fieldwork with complexity and richness. In an urban setting there is a spectrum of specialists ranging from the part-time generalist to the full-time healer specialists; some work from botánicas and others work from their homes. Many healers have other jobs in addition to their healing practices. This is also the case elsewhere with traditional healers (Arvigo and Balick 1998:5–7).

This study has provided an important opportunity to learn about the rich and varied health-

care practices used within immigrant communities in New York City. Working with a large, multidisciplinary team makes possible an exchange of ideas and enhances the conclusions of the results. Future studies will incorporate additional ethnic communities as well as other urban centers in the United States and elsewhere. The dynamic environment and complex cultural interactions in an urban setting offer a challenging opportunity for expanding the frontiers of research on the relationship between plants and people.

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