

## Use of Medicinal Plants in Monterrey, Mexico

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### Abstract

Mexico has a rich tradition in medicinal plant use within its diverse traditional healing practices. Many people have used medicinal herbs to treat a variety of diseases and ailments for many generations. Located in the northeast, Monterrey is Mexico's third largest city and one of the most industrialized cities in Latin America. In spite of widespread use of modern pharmaceuticals, and the availability of "scientific" or mainstream medicine in this city, many people still rely on traditional healers, as well as the use medicinal plants to combat illness. This study was undertaken in order to obtain information regarding the most popular medicinal plants used in Monterrey, as well as their uses, forms of application, and origin. Thirteen herbal providers voluntarily accepted to be interviewed within 2 of the city's largest popular herbal marketplaces. A questionnaire written in the Spanish language was provided to all interviewees, regarding their years in business, their source of information or expertise in recommending herbs, as well as the type of herbs employed for the treatment of various diseases or afflictions. Fifty-six medicinal plants belonging to 27 botanical families, mostly sold as crude herbs, were mentioned by the herbal providers as being the most commonly used to treat various ailments.

**Keywords:** medicinal plants, traditional medicine, Mexico

### Introduction

Mexico has a rich tradition in medicinal plant utilization among its varied folk healing practices (Aguilar, 1999; Argueta *et al.*, 1994; Linares *et al.*, 1994; Lozoya 1994; Martinez, 1989). Approximately 62 different ethnic groups currently live in Mexico, each with its own culture and dialect and medicinal herbal repertoire (Aguilar 1994; Lozoya, 1999).

It is estimated that the Mexican medicinal flora contains between 3000 and 5000 plants that have potential medicinal benefit (Aguilar, 1998; Lozoya, 1994).

A total of 3,000 species have been compiled in two atlases of medicinal plants employed by diverse ethnic groups throughout Mexico (Aguilar *et al.*, 1994). Incredibly, of these only approximately 1% of them have been studied in depth, regarding their potential medicinal properties (Argueta *et al.*, 1994). It is therefore apparent that more research has to be undertaken in order to elucidate the possible medicinal benefit of various Mexican plants.

In the twenty-first century it is possible to state that there is more information about some plants' active principles than ever before. The reason is that modern detection techniques and research have greatly expanded our knowledge about some of the possible medicinal and toxicological properties of plants (Awang, 2009).

This is not to say that everything is known about the potential curative properties of many species belonging to the plant kingdom. We are currently far from cataloguing all the data pertaining to the medicinal uses of perhaps

thousands of plants, especially those employed in remote areas of the world (Van Wyk and Wink, 2007).

With regard to the flora of tropical regions for example, the most biologically diverse areas of the world, much has still to be learned about the indigenous healing practices and the medicinal and or toxic plant species which are employed in them (Schultes and Raffauf, 1990).

The use of herbal medicine is deeply embedded in Mexican culture, and even though many cities in Mexico have modern hospitals and accessibility to mainstream medical care, many people still rely on traditional herbal medicines (Argueta, 1994). This study was undertaken in order to obtain information regarding the most popular medicinal plants used in Monterrey, as well as their uses, forms of application, and origin.

Located in the northeast part of the country, Monterrey is Mexico's third largest city, after Mexico City and Guadalajara, respectively. Additionally it is the largest city in Northern Mexico and one of the most important industrial cities in Latin America. Currently the capital of the state of Nuevo León, the city was founded in 1596 by the Spanish *conquistadores*. Monterrey has an estimated population of over 4 million people (National Statistical Data on Mexico, 2009).

Monterrey possesses some of Mexico's most modern hospitals, and is also considered an important center of higher learning, being home to various prestigious universities and 3 major allopathic (conventional or "scientific") medical schools (Encyclopedia of Monterrey, 2010).

Even though many “modern” pharmaceuticals are readily available, herbal products are still very popular and sold in diverse places throughout the city, including modern supermarkets, department stores and even pharmacies. The two market places chosen for this study still base the majority of their herbal repertoires as crude herbs which are used mostly as teas (infusions).

*Markets are an important source of medicinal plants in Northeastern Mexico*

A plethora of medicinal plants are used within the framework of traditional medicine in Northeastern Mexico, as well as in the rest of the country, for the treatment of a multitude of ailments and diseases (Adame and Adame, 2000; González, 1999; Argueta, 1994).

Additionally, the use of medicinal plants is a commonly accepted practice among various natural health providers in various parts of Mexico (Taddei-Bringas *et al.*, 1999).

A popular market or *mercado*, as is commonly known in Mexico and other countries of Latin America, is an enclosed market place in which various owners have a space in which they offer their wares for sale. The items displayed for sale include a wide array of commodities, such as fresh vegetables, fruits, meats, house-wares, pets (birds and fish, for example), as well as a diverse assortment of medicinal herbs. These types of markets include stands in which a variety of herbal products are offered for sale, commonly known as *hierberías*.

Many of these herbal products are the crude herbs themselves, usually dried, cut into small pieces, and sold as packets or by weight. Since many of these products cannot be obtained in most of the more sophisticated stores or supermarkets, popular markets have a larger selection of crude herbs. Additionally, the popular markets in Mexico retain some of the cultural flavor regarding medicinal herbs traditionally used for healing and usually have herbal vendors who may also act as healers (Taddei-Bringas *et al.*, 1999; Aguilar, 2001).

#### Material and methods

The study was undertaken in the two largest herbal market places (the Benito Juárez and Colón markets), which were chosen due to both their popularity as well as their diversity regarding herbal products used in Mexican traditional medicine.

The sites selected for the survey included the largest popular markets in the downtown area of Monterrey. These markets are enclosed in one or two story buildings especially constructed for them. The Benito Juárez market is the oldest (founded in 1907) and by far the largest and most diverse of the two (Encyclopedia of Monterrey, 2010).

The Colón market, by contrast, is much smaller and is located approximately one mile away, near a modern shop-

ping area near the Santa Catarina River. This market has only about one fourth the number of herbal stands compared to the Benito Juárez market.

Each herbal provider was visited in his / her store and invited to participate. The providers were assured that their names or the names of their stores would not be mentioned in any written report.

If the provider agreed to participate voluntarily, the interview commenced by administering a survey tool which contained various questions, including the number of years the herbal provider had been in business, how the vendor had obtained his/her knowledge about herbs, a listing of the most popular herbs sold, as well as the diseases for which they were usually recommended.

*Most herbal vendors were wary of divulging information*

In both study sites, it was very difficult to recruit the herbal providers' participation in the interview and survey, as many of them manifested fear and mistrust of the study being a “trick” for a possible raid by local governmental medical authorities against the use of herbal products as medicine.

Because of this, some of the interviewees manifested their fear of being accused of practicing medicine, which would render them liable to legal prosecution. Some of the herbal providers also mentioned that in the past, they have been subjected to searches and embargo of certain herbs and herbal products by the local authorities with the pretext that the products seized were “harmful to health” or which contained some ingredient that was deemed hazardous according to state or federal health laws.

One of the conditions stipulated in the interview was that the herbalists' names, as well as the names of their shops would be kept confidential. Only the postal (zip) code of the locations was recorded.

Due to the distrust of strangers coming to the market asking questions about medicinal herbs, only 13 of a total of 30 herbal providers approached, agreed to participate in the study. No monetary reward was offered for their participation.

#### Results and discussion

*Types of medicinal plants sold*

Aside from various medicinal plants native to Mexico, some herbal vendors also offer relatively recent introductions to the Mexican market including Ginkgo (*Ginkgo biloba-Ginkgoaceae*), St. Johns wort (*Hypericum perforatum-Clusiaceae*), Kava (*Piper methysticum-Piperaceae*, and Devil's claw (*Harpagophytum procumbens-Pedaliaceae*), for example. These herbs are not usually available as crude drugs, but rather in the form of capsules, tablets, or liquid extracts, alone or in combination with other herbs.

Tab. 1. Medicinal plants used to treat diverse ailments in Monterrey

Common name(s) in English (Spanish)	Scientific name/botanical family	Medicinal use	Form of use
Arnica, False ( <i>Árnica del país</i> )	<i>Heterotheca</i> spp. <i>Asteraceae</i>	Treatment of gastric ulcers; externally for bruises	Internally, the flowers are steeped in boiling water and taken as a tea; externally, the plant is applied to unbroken skin as a cream or ointment
Ashplant, Texas silverleaf ( <i>Cenizo</i> )	<i>Leucophyllum texanum</i> ( <i>Scrophulariaceae</i> )	Liver and gall bladder problems	Tea
Basil ( <i>Albahaca, Albácar</i> )	<i>Ocimum basilicum</i> ( <i>Lamiaceae</i> )	Nervousness	Tea
Beggar's tick, Black jack ( <i>Aceiteilla</i> )	<i>Bidens pilosa</i> ( <i>Asteraceae</i> )	Diabetes	The whole plant is used to make a tea
Bitter melon ( <i>Cundeamor</i> )	<i>Momordica charantia</i> ( <i>Cucurbitaceae</i> )	Diabetes	Fruit is fried and eaten
Black cohosh ( <i>Cohosh negro</i> )	<i>Actaea racemosa</i> (Syn. <i>Cimicifuga racemosa</i> ) ( <i>Ranunculaceae</i> )	Menopause	Tablets
Boldo	<i>Peumus boldus</i> ( <i>Monimiaceae</i> )	Digestive and Liver problems	Tea, tablets
Bugambilia	<i>Bougainvillea spectabilis</i> ( <i>Nyctaginaceae</i> )	Coughs	The flowers are steeped in boiling water to make a tea
Cancerina	<i>Asclepias</i> spp. ( <i>Apocynaceae</i> )	Colitis, Cancer	Tea, Capsules
Centaury ( <i>Chancarro, Changarro</i> )	<i>Centaurea</i> spp. ( <i>Asteraceae</i> )	Diabetes	Tea
Chamomile ( <i>Manzanilla</i> )	<i>Matricaria recutita</i> ( <i>Asteraceae</i> )	Colic; externally as eye wash	Tea
Charrasquilla	<i>Mimosa malacophylla</i> ( <i>Fabaceae</i> )	Kidney problems	Leaves are used as tea
Citrus blossom ( <i>Flor de azahar</i> )	<i>Citrus</i> spp. ( <i>Rutaceae</i> )	Nerves, insomnia	Tea, extract, capsules
Corn silks ( <i>Cabellos de elote, Pelos de Elote</i> )	<i>Zea mays</i> ( <i>Gramineae</i> )	Urinary problems	Tea
Creosote bush, "Chaparral" ( <i>Gobernadora, Guámis</i> )	<i>Larrea tridentata</i> ( <i>Zygophyllaceae</i> )	Kidney or gall bladder stones	Taken internally as tea, extract or capsules for kidney stones; external application as drops or ointment for onychomycosis
Cuachalalate, Cuachalalá	<i>Juliana adstringens</i> ( <i>Anacardiaceae</i> )	Gastric ulcers	Tea
Damiana ( <i>Damiana, Hierba de la pastora</i> )	<i>Turnera diffusa</i> ( <i>Turneraceae</i> )	Treatment of impotence and promote ovulation, aphrodisiac	Tea, extract, and capsules
Eucalyptus ( <i>Eucalipto</i> )	<i>Eucalyptus</i> spp. ( <i>Myrtaceae</i> )	Coughs, asthma	Tea, tablets
Evergreen sumac ( <i>Lantrisco, Lambrisco</i> )	<i>Rhus virens</i> ( <i>Anacardiaceae</i> )	Diabetes	Bark is boiled in water to make a tea
Everlasting, Cudweed ( <i>Gordolobo</i> )	<i>Gnaphalium</i> spp. ( <i>Asteraceae</i> )	Coughs, respiratory problems	Tea, syrup
Flor de manita	<i>Pentadactylon</i> ( <i>Sterculiaceae</i> )	Nervousness	Tea, extract, capsules
Hámula	<i>Brickellia cavanillesi</i> ( <i>Asteraceae</i> )	Gastro-intestinal problems, diabetes	Tea
Hierba de la virgen	<i>Loeselia mexicana</i> ( <i>Polemoniaceae</i> )	To promote blood circulation	Tea
Hierba del cáncer	<i>Asclepias</i> spp. ( <i>Apocynaceae</i> )	Cancer	Tea
Hierba de San Nicolas	<i>Chrysactinia mexicana</i> ( <i>Asteraceae</i> )	Treatment of infertility in women	Tea
Horehound ( <i>Marrubio</i> )	<i>Marrubium</i> spp. ( <i>Lamiaceae</i> )	Gall bladder problems, coughs	Tea
Horsetail, Bottle brush ( <i>Cola de caballo</i> )	<i>Equisetum</i> spp. ( <i>Equisetaceae</i> )	Kidney problems	Tea
Kava	<i>Piper methysticum</i> ( <i>Piperaceae</i> )	Insomnia	Capsules
Indian plantain ( <i>Matarique, Hierba de la tarántula</i> )	<i>Psacalia decomposita</i> ( <i>Asteraceae</i> )	Gastritis, Kidney stones	The leaves, twigs and flowers are used to make a tea
Kidneywood ( <i>Palo Azul</i> )	<i>Eysenhardtia</i> spp. ( <i>Fabaceae</i> )	Kidney stones, infections	Tea
Linden flower ( <i>Flor de Tila, Tilia</i> )	<i>Tilia</i> spp. ( <i>Tiliaceae</i> )	Nerves, insomnia	Tea
Magnolia	<i>Magnolia</i> spp. ( <i>Magnoliaceae</i> )	Heart problems, hypertension	Tea
Mexican sage ( <i>Altamisa</i> )	<i>Artemisia mexicana</i> ( <i>Asteraceae</i> )	Skin infections	Externally as a wash
Mexican thistle, Rattle- snake master ( <i>Hierba del sapo</i> )	<i>Eryngium</i> spp. ( <i>Apiaceae</i> )	Kidney stones	Tea
Nettle ( <i>Ortigailla</i> )	<i>Urtica</i> spp. ( <i>Urticaceae</i> )	Skin infections	Externally on skin as a poultice; internally as a tea for "purifying the blood"
Olive leaf ( <i>Hoja de olivo</i> )	<i>Olea europea</i> ( <i>Oleaceae</i> )	Lower cholesterol	Tea made from leaves
Oregano (Orégano)	<i>Origanum</i> spp. ( <i>Lamiaceae</i> )	Respiratory and digestive problems	Tea
Pennyroyal ( <i>Poleo</i> )	<i>Mentha pulegium</i> ( <i>Lamiaceae</i> )	Insomnia	Tea
Prickly pear cactus ( <i>Nopal</i> )	<i>Opuntia</i> spp. ( <i>Cactaceae</i> )	Lower cholesterol, to lose weight	Capsules
Purging cassia ( <i>Caña- fistula</i> )	<i>Cassia fistula</i> ( <i>Fabaceae</i> )	Laxative	Tea made from fruit

Tab. 1. Medicinal plants used to treat diverse ailments in Monterrey (Continuous)

Common name(s) in English (Spanish)	Scientific name/botanical family	Medicinal use	Form of use
Resurrection plant ( <i>Doradilla</i> )	<i>Selaginella</i> spp. ( <i>Selaginellaceae</i> )	Kidney problems	Tea
Rue ( <i>Ruda</i> )	<i>Ruta graveolens</i> ( <i>Rutaceae</i> )	To promote menstruation	Tea
Sage ( <i>Salvia</i> )	<i>Salvia</i> spp. ( <i>Lamiaceae</i> )	Immune stimulant	Tea
Senna ( <i>Hoja de sén</i> )	<i>Senna</i> spp. ( <i>Fabaceae</i> )	Laxative	Tea
Simonillo	<i>Coryza filaginoides</i> ( <i>Asteraceae</i> )	"Empacho", digestive problems, diabetes	Tea
Skunk wormseed ( <i>Epazote de zorrillo</i> )	<i>Chenopodium graveolens</i> ( <i>Chenopodiaceae</i> )	Asthma, coughs	Tea
Sweet marigold ( <i>Hierbanís</i> )	<i>Tagetes lucida</i> ( <i>Asteraceae</i> )	To calm nerves and treat fright ( <i>susto</i> )	Tea
Tamarind ( <i>Tamarindo</i> )	<i>Tamarindus indica</i> ( <i>Fabaceae</i> )	Laxative	Fruit pulp mixed with water
Tepecoahuite	<i>Acacia</i> spp. ( <i>Fabaceae</i> )	Burns (external application), gastric ulcers (internal application)	Tea, powdered root and bark, capsules
Valerian ( <i>Valeriana</i> )	<i>Valeriana</i> spp. ( <i>Valerianaceae</i> )	Nervousness, insomnia	Extract, capsules
Wereke, Wareki, Güereque	<i>Ibervillea sonora</i> ( <i>Cucurbitaceae</i> )	Diabetes	The root is boiled in water to make a tea, or pulverized root is taken in capsules; liquid extracts are also available
White zapota ( <i>Zapote blanco</i> )	<i>Casmiroa edulis</i> ( <i>Rutaceae</i> )	Hypertension	Tea, extract
Wormwood ( <i>Ajenjo</i> )	<i>Artemisia</i> spp. ( <i>Asteraceae</i> )	Stomach ailments, to expel worms	Tea, extract
Wormwood ( <i>Estafiate</i> )	<i>Artemisia</i> spp. ( <i>Asteraceae</i> )	Digestive problems and to expel worms	Tea
Wormseed ( <i>Epazote</i> , <i>Epazote de comer</i> )	<i>Chenopodium ambrosioides</i> ( <i>Chenopodiaceae</i> )	Digestive problems, flatulence, and to expel worms	Tea

A wide array of products, ranging from simple crude herbs to processed products such as liquid extracts, ointments, capsules, and tablets, are readily available and used to many diseases. Additionally, it was observed that some "natural" products or supplements sold in Monterrey's herbal outlets contain not only herbs, but also vitamins, minerals, and other compounds and are now known commercially as "nutraceuticals" (*nutracéuticos*).

Fifty-six medicinal plants belonging to 27 botanical families, mostly sold as crude herbs, were mentioned by the herbal providers as being the most commonly used in that city to treat a diverse variety of ailments. Tab. 1 summarizes some of the more popular medicinal plants used in the treatment of various diseases in Monterrey.

#### *Number of years selling medicinal plants*

The number of years of experience in selling and/or recommending diverse medicinal plants ranged from 5 to 45 years, among the herbalists interviewed.

#### *Vendors' sources of knowledge regarding herbs*

Of the 13 herbalists interviewed, 7 (58%) mentioned they had acquired their knowledge by reading books or attending courses and seminars about medicinal plants.

Within this group, only two had a college or professional degree: one had a naturopathic therapist degree and the other was a veterinarian with a master's degree in chemistry. The remaining six mentioned they had acquired their knowledge about the use of medicinal herbs from family tradition and / or personal experience.

#### *Medicinal plants can be more affordable than medications*

Although certain suburbs of Monterrey are considered to be very affluent (San Pedro / Garza Garcia, for example), much of the urban population still relies on the minimum wage and often does not have the means to buy medications, some of which can be very expensive.

This is one of the reasons why herbal vendors mentioned that certain herbs and herbal products are an affordable option for people with lower incomes. Another important and influential socio-economic factor is that the use of medicinal herbs is part of the rich cultural heritage of Mexico.

#### **Conclusions**

In spite of widespread use of modern pharmaceuticals, and the availability of "scientific" or mainstream medicine

in Monterrey, many people still rely on traditional healers, as well as the use medicinal plants to combat illness. This may be due to cultural factors and also because these products are usually much more affordable in comparison to most over the counter or prescription medications.

A major factor regarding the use of medicinal plants and other related herbal products seems to be their role in traditional medicine, which continues to be a very important part of Mexican cultural heritage, which even today extends well beyond its northern borders, into what is now the Southwestern United States, among the Mexican-American population (González-Stuart and Rivera, 2009; Torres, 2006).

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