

HERBS: CULTIVATION, CULINARY USE AND CURATIVE PROPERTIES

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HERBS: CULTIVATION, CULINARY USE AND CURATIVE PROPERTIES

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"The friend of physicians and the praise of cooks." – Charlemagne

Abstract

Throughout human history, people have relied on traditional wisdom not only as a practical guide to life, but as a muse, moral code, and source of identity vital to meaning and purpose in life. Mechanization and industrialization have heralded in a new age of equality through technology and practical science. However, in the process of progression toward what has been marketed as an ever-enlightened future, ways of life representing different cultures are excluded and forgotten. As society evolves, it is important to preserve diversity, to emphasize the variance of the wide spectrum of human existence and enrich collective knowledge and aesthetic beauty.

The significance of diversity is not limited to human experience; benefits of biodiversity often mirror those of cultural diversity. Biodiversity expands the gene pool, giving rise to new and more adaptable species; in the same way, cultural diversity shapes differing opinions and ideas. Modern agriculture posits its supremacy in feeding the world's hungry over systems designed to imitate nature; despite the abundance of food, starvation persists and environments are threatened. Commercial farms operate solely under the principal of productivity measured in profit and crop yield. Recent research has increasingly shed light on the flaws inherent in modern innovation. By exploring the myths, traditions and ways of life of the Mexican people through a narrative on traditional culinary and medicinal herbs, I hope to embrace my own heritage and discover the wealth of related knowledge often left out of classrooms.

Introduction

The progression of human civilization has been dominated by urbanization, technological advances and mechanization. Across the developed world, the green revolution and city life have molded and shaped human dietary practices, effectively altering the environment and our relationship with it. Current research has identified nine “planetary boundaries” that, once crossed, will compromise the stability of Earth’s environment that has facilitated human development. Out of the nine, three (climate change, loss of biodiversity and nitrogen and phosphorous cycles) boundaries have already exceeded the thresholds research has placed (Rockstrom et al, 2009).

Aside from fossil fuels, modern agricultural systems account for one of the most significant negative impacts on the environment resulting from human activity. While some innovations in agricultural practices have been positive and allowed for greater availability of food, malnutrition continues to pose a problem, despite abundance. In 2000, the entire food supply provided 3800 calories a day for the average American, yet not all of this food makes it to every table. An estimated 1100 calories of the 3800 are not consumed due to spoilage, plate waste and other losses. Obesity and poor lifestyle choices have shifted the pervasive health issues from infectious disease to chronic illnesses, notably heart disease, stroke, cancer and diabetes. In the both Texas and the United States as a whole, 3 out of 4 deaths are attributable to chronic illness – more than alcohol, automobile accidents, AIDS, drugs, suicides, homicides and fires combined (Huang, Weihua & Parrish, 2008). Heart disease is the most prevalent of the chronic illnesses, although diabetes is especially prevalent in African-American and Latino populations. One risk factor that is observed in the youth population across the board is inadequate consumption of fruits and vegetables (less than five servings a day). Aside from

education and outreach, providing broader, more affordable access to quality fruits and vegetables is essential in shifting these health trends.

Many families, especially low-income city-dwellers, are food-insecure, or don't have access to a steady, quality food source. The percentage of food-insecure households in the United States has risen steadily from 11% of families in 2005 to 14.7 % in 2009, and an even larger percentage of children account for Americans in food-insecure homes (US Census Bureau, 2012). Urban farming and individual gardening can supplement groceries and provide economic benefits for families struggling to put food on the table. Herbs especially can be an expensive luxury that many low-income families may forgo in favor of energy-dense foods that are filling and cheaper. Growing some of these plants in the home can alleviate the burden of shopping for expensive ingredients and allow families to incorporate herbs into daily cooking.

The composition of the population living in poverty is not equal among racial and ethnic groups. Census data from 2007 to 2011 shows that of the 14.3% of the population that meet the government's definition of poverty, American Indians and Alaskan natives, African-Americans and Hispanics experience the highest levels of poverty at 27%, 25.8% and 23.2% respectively (Macartney, Bishaw & Fontenot, 2013). Therefore, these ethnic and racial groups are most vulnerable to hunger and poor nutrition. In addition, they may be concentrated in urban areas where space for gardening is limited and locally grown food items are unavailable or too expensive. The poverty rate in Texas is higher than the national average with 20.3% ($\pm 1.2\%$) of citizens identifying themselves as below poverty line; the Hispanic population is similarly above the national average at 25.9% of the population living below the poverty line (Macartney, Bishaw & Fontenot, 2013).

Out of the 40 million adult and child immigrants to the US, more than half trace origins back to Latin America or the Caribbean (Perreira & Ornelas, 2013). In US Census data from 2013, Hispanics accounted for 38.2% of the population in Texas; far above the national average due to Texas's shared border with Mexico. Assimilation into American society has been cited as essential to success and upward mobility for immigrants, however recent sociological literature is beginning to question these ideas. Modern segmented assimilation theory suggests immigrants have several paths to assimilate into American culture, and acculturation or Americanization does not always lead to a better life (Greenman & Xie, 2008). The new line of thought suggests that assimilation can be positive or negative depending on what aspect of life the researcher chooses to focus on. The World Health Organization breaks down quality of life indicators into six domains, each with various aspects contributing to a positive or negative disposition: physical health, psychological, level of independence, social relationships, environment, spiritual/religion/personal beliefs (WHO, 1997). However, studies often equate economic success, academic achievement and criminal activity with successful adjustment to American life; however focusing more on abstract measures of quality of life, involving emotional, social and spiritual health, shift the perspective of what constitutes success when taken into consideration.

In the wake of globalization and an increasingly Westernized world, modern thinkers question the supremacy of capitalism, the culture industry (Hollywood), and the idea of progress that has become inextricably linked to the "American dream" (Morley & Robins, 2002). Beginning the inquiry of self-exploration and discovery of the world we inhabit through realizing cultural heritage and identity can be a daunting journey for Americans, but embracing American culture doesn't need to be synonymous with abandoning one's roots.

Focus

The aim of my research is to both present a comprehensive portrait of native regional and traditional Mexican culinary herbs and their properties to construct a straightforward and thorough guide to practical application of the knowledge of these herbs. Gardening represents an engaging physical activity in which individuals can not only expand their agricultural horizons, but cultivate a viable food source, enrich the soil, encourage biodiversity and engage in physical activity.

Cultivation

The growing body of evidence supporting a global shift to a more sustainable, and perhaps even regenerative, lifestyle has shaped modern trends and attitudes. Organic and “all natural” products have gained popularity as concern for the environment becomes more widespread. Although it may be impossible (especially for city-dwellers) to become completely self-sufficient, there are many options for people of all walks of life to embrace.

If available land and resources are limited, individuals may consider joining a crop share, where they have the opportunity to purchase or work for fresh produce, or buying a plot at a community garden. A case study examining the experience of thirty-eight Hispanic, low-income families in a community gardening project recorded vegetable intake increases three- and four-fold in children and adults respectively, however also found that community gardening strengthened family ties, reduced stress, and almost eliminated food insecurity (from 31% to 3% of individuals reporting food insecurity). In addition, families used traditional Mexican methods of pest-control without pesticides (Carney, Hamada, et al, 2012).

Growing out of planters, window boxes, or hanging baskets are great options for beginning gardeners. Tomatoes, strawberries and herbs are well-suited to confined pots on apartment balconies or even indoors. Containers, window boxes and hanging baskets may need more watering and closer inspection than herbs planted in the ground. The general guideline is one inch of water per week, although special attention may be necessary in drought (A&M, 2014). A small garden space in a backyard can provide fruits, vegetables and even space for chickens or bees (Bridge, 2011). Ideal gardening space is sunny, well-drained, flat and fertile, although other spaces can be tailored to fit needs.

In botany, herbs are classified as a “seed plant that does not produce a woody stem” (West Virginia University). Herbs can be cultivated in pots or containers indoors, and many are perennial, meaning their life cycle consists of several growing seasons; typically the top part of the plant dies while the roots persist. An annual plant’s life cycle, from seed to flower to seed, occurs within one growing season, and biennials complete a life cycle within two years (A&M, 2014). Spatial and financial limitations many low-income, urban families may face make herbs an ideal introduction into the art of gardening and farming.

Ideal space for each individual herb plot is 12x18 inches; removing about 17 inches of soil and placing a 3 inch layer crushed stone at the bottom before replacing soil mixed with compost should ensure proper drainage – herbs don’t do well in extremely wet soil (West Virginia University). Herbs like mint can be invasive and should be confined to a can or bucket within the garden plot.

Seeds should be sown in late winter in shallow containers; then in spring seedlings can be transferred to bigger containers or plots in the ground. Smaller seeds should be planted closer to the surface of the soil, and some herbs are best planted directly into the soil intended

for cultivation as they do not transplant well (ex. cilantro). Aside from seeds, perennial herbs may be propagated by digging up the plant, taking cuttings of the top part of the plant or dividing the plant, and planting the removed part in the soil; this can be done every three or four years in the spring (A&M, 2014).

The most limiting environment to plant growth is one with scarce amounts of water. The climate in Texas is the perfect example of this problem. While irrigation systems are essential in overcoming the problem of drought, they are not the perfect substitute for rain fall (Arnold, 2008). Furthermore, if rainfall is not consistent or lacking altogether, even the best irrigation system may fail to make a difference. Another problem in arid climates lies in the humidity level of the atmosphere, in low humidity environments there could be appropriate soil moisture but the plant may still not maintain turgor, or appropriate fluid balance within the cell wall (Arnold, 2008). Conversely, excess water, as in a flood situation, can introduce a problem due not to the exposure but to the unavailability of oxygen (anoxia) caused mainly by poor surface drainage (Arnold, 2008). Whether or not the plant can survive these conditions is dependent on the species – some plants are well-adapted and can even thrive in this situation while others will die quickly.

After the availability of water, heat represents one of the most problematic factors inhibiting the growth of plants in Texas. Extremely high temperatures ultimately affect membrane permeability of plants and cause the denaturation of proteins. Prolonged high temperatures can be a problem, and drought during the summer couple with limited access to water can pose an obstacle that some plants just cannot overcome. An often overlooked problem can present itself in high temperatures at night. This leads the plant to higher levels of output (respiration), and if the plant is burning more energy than it is creating through

photosynthesis it will literally starve itself (Arnold, MA, 2008). Another concern can occur when heat is amplified by reflective surfaces (Arnold, MA, 2008). This can be especially relevant in urban or suburban settings near sidewalks and streets. When the ground around the roots absorbs heat during the day it can elevate the temperature around the roots, restricting growth. Above ground beds are even more susceptible to experiencing issues as a result. However, many plants are well-adapted to the climate and others may be monitored closely to give them a better chance of normal growth.

Culinary Uses

Modern Americans have steadily consumed more and more meals outside of the home over the years. Eating out at fast food restaurants and even traditional restaurants can account for not only excess caloric intake, poor composition of diet (malnutrition), and reliance on destructive and environmentally harmful agricultural practices but also results in a knowledge deficit in the kitchen. Take-out accounted for only 18% of the American diet in 1977-78, rising to 32% in 1994-96 (USDA, 2002). Culinary knowledge enhances the experience of cooking in the home, and while many meals may be time consuming to prepare, there are plenty of simple recipes that take 20-30 minutes of kitchen time. Herbs are low-calorie and fat-free, making them great incorporations into a healthful diet that can really enhance the flavor of a meal.

As modern generations have lost touch with the culinary traditions and practices passed down through families and preserved by strong identification with culture, knowledge of how to cook with native herbs and plants is falling by the wayside. Aside from losing the ability to flavor dishes with herbs and spices, future generations will lose something more abstract and powerful – ties to their heritage and enriching aspects of history. As convenience and processed foods begin to dominate the food market, consumers are inundated with ideas of what constitutes

Mexican food. Taco Bell’s “Doritos Locos” tacos have been such a successful addition to their menu that the fast-food company released a Cool Ranch flavor to sate the public’s hunger for more. While acculturation works to integrate traditional Mexican cuisine into mainstream American cuisine, creating novel dishes, reducing the vast array of cooking styles, seasonings and traditional meals of this rich culture to just a few (albeit profitable and delicious) items – salsa, tacos, chili – takes away from everything Mexican food has to offer.

Mexico is a country rich in culinary tradition influenced both by native peoples and the Europeans who would later conquer Central America and spread their cultural practices to the region. Some of the most commonly used herbs that are typically grown in the home are oregano, rosemary, rue, epazote, parsley, basil, mint, thyme and cilantro (Latorre, 1977).

Perennial	Annual	Biennial
Oregano (annual in cold climates)	Basil	Parsley
Rosemary	Epazote (short-lived perennial)	
Rue	Cilantro (Coriander)	
Mint		
Thyme		
Chile piquín		

Table 1. This table divides some common Mexican culinary herbs into categories based on growing patterns and life cycle.

Oregano, one of the most widely used herbs, can be harvested practically year round. Despite its prevalence in Italian cooking, another variety is common in Mexican cuisine. Mexican oregano is small and aesthetically pleasing with purple flowers. It can be used to season meats,

stews and soups however the aroma in the leaves is often used to flavor Mexican rice. It can be used fresh or dried but most often the leaves are dried and crushed. Like oregano, basil is often associated with Italian cuisine, but definitely not limited to it. It compliments tomato-based dishes well but is also used in meat and vegetable dishes or as an ingredient in homemade salad dressings. Rosemary is a hearty plant that fares well in the hot and dry climate of Texas and Central America; many use it in landscaping for ornamental purposes as well (even Texas State University!). It has a strong scent and the thin, needle-like leaves are often used to marinate meats like chicken or pork (Texas Cooperative Extension Staff, Bexar County, 2003).

Thyme, a widely varied plant with more than 400 varieties available, is often used in food to flavor beef, fish, poultry, soups and vegetable dishes. It is aromatic and a tough plant, much like rosemary. Common thyme, the variety often found in cooking, makes a great herb to include in a garden for beginners. Mint, called *hierba buena*, is also easy to grow, in fact the problem lies in containing this prolific plant. If planted in the ground, it is best to contain it to a pot, so the roots don't invade neighboring plants and hybridize them. Mint tastes great with tea but is often used to flavor meat and poultry as well. Parsley, a garnish that goes uneaten in many dishes, is actually nutrient-rich, containing high amounts of vitamins A and C and iron.

Another essential Mexican herb is cilantro, or coriander. It is bright green and leafy, adding a "clean" or "fresh" flavor. Younger leaves may be preferable to older leaves, as the latter can be too strong and overwhelming. Cilantro is especially common in salsas, which can be eaten with chips as a dip or added to many different dishes for flavor. Seeds can also be included in recipes like pastries, sausage and cooked fruit to add an orangey flavor (Texas Cooperative Extension Staff, Bexar County, 2003).

Peppers are also a staple of Mexican cuisine – a wide range of flavor from sweeter poblanos to fiery habaneros is present in the region. Peppers add flavor to soups, stews, meats and sauces and is also a good source of vitamin C. The chile piquín, a very small, very hot pepper, is one herb that grows almost ubiquitously in the region and is often harvested from wild sources. Another herb that proliferates in the wild and originated from Mexico (and Central America in general) is epazote, or wormseed. Epazote’s name is derived from the Náhuatl words “epti” and “zotle”, meaning “skunk sweat”, signifying the distinct flavor of the plant. It is commonly used to flavor beans, and coincidentally enough it is believed to relieve flatulence!

There are many variations of traditional recipes utilizing fresh and dried herbs. Following this section are a few recipes containing herbs discussed from a Mexican cooking book to provide an idea of what Mexican cuisine consists of and how the flavors are combined.

SALSA VERDE CRUDA

Raw Green Tomatillo Salsa

While salsas made from red tomatoes are often on the table, especially in central Mexico, it is the green salsas made with *tomates verdes*, the smaller, papery husk-wrapped tomatillos of the same nightshade family, that predominate in most of the country. This simple salsa with its tart chile flavor is a surprising accent for any grilled meat.

Makes about 1½ cups

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| ½ pound tomatillos (about 5 or 6), husked, well rinsed, and roughly chopped | · | Starting with the tomatillos, put all of the ingredients in a blender or food processor, then process to a smooth consistency. |
| 2 chiles serranos, stemmed and roughly chopped, including seeds | · | The salsa should be quite thick, so don't be tempted to add water to thin it. It is best |
| 2 tablespoons roughly chopped white onion | · | when served right away, but it will keep in the refrigerator for up to 1 day. |
| 1 teaspoon roughly chopped garlic | · | |
| ¼ cup chopped fresh cilantro, thick stem ends removed | · | |
| ¾ teaspoon fine sea salt, or to taste | · | |

Fig. 1: A recipe from *La Cocina Mexicana* for salsa containing cilantro to add a fresh taste; cilantro is very common in Mexican salsas (Tausend, 2012).

SOPA HUASTECA DE ESPINACA Y CALABACITA

Spinach and Zucchini Soup

While researching the foods of the Huastecs living in northeast Veracruz and the adjacent state of San Luis Potosí, Ricardo noticed that the cooks, not wanting to waste anything, use any tiny bits of leftover pork or chicken to flavor their simple vegetable soups.

To enliven this soup, add a spoonful of Salsa de Cuaresmeños (page 32) or Salsa Verde Cocida con Aguacate (page 31). A bowl of this soup pairs quite happily with Gorditas de Frijoles Negros (page 68).

Serves 6 to 8

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|---|---|
| <ul style="list-style-type: none"> 1 tablespoon canola or safflower oil ¼ cup finely chopped white onion 1 cup fresh or thawed frozen corn kernels 2 large cloves garlic, minced 4 cups chicken broth (page 25) or vegetable broth 1 cup shredded cooked chicken (page 25) or pork (optional) 3 small zucchini (about ¾ pound), cut into ¼-inch cubes ¼ cup chopped fresh epazote leaves (cilantro or Italian parsley can be reluctantly substituted) 1 teaspoon sea salt ¼ pound spinach leaves (1 cup firmly packed), roughly chopped with some small leaves left whole | <ul style="list-style-type: none"> ▪ Heat the oil in a large <i>cazuela</i> or Dutch oven over medium-high heat. Add the onion and fry for a few seconds. Add the corn and garlic and cook, stirring frequently so nothing burns, for about 5 minutes. Add the broth, shredded meat (if using), zucchini, epazote, and salt, lower the heat, and simmer for 5 minutes longer to heat through and blend the flavors. Taste and add more salt if needed. ▪ Add the spinach, allow it to wilt, and then immediately ladle the soup into warmed deep bowls and serve. |
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Fig. 2: A recipe from *La Cocina Mexicana* for spinach and zucchini soup containing epazote (or substituting cilantro and parsley) (Tausend, 2012).

SIKIL-PAK CON NARANJA AGRIA

Pumpkin Seed Dip with Bitter Orange Juice

Isla Mujeres (Island of Women), just off the shore from Cancun in the state of Quintana Roo, is now a laid-back, small resort community with a population of only fifteen thousand inhabitants. Few of them, however, are native Maya, even though the island once served as the sanctuary for Ixchel, the Mayan goddess of the moon, fertility, and medicine.

Ricardo spent hours sitting in the doorway of the home of Julia Magaña, a member of a local Mayan family, talking with her about her many regional dishes. Among them was *sikil-pak*, the name of which is a combination of the Mayan words for pumpkin seeds and tomatoes. She told him that she always serves it as a prelude to a special meal of the grilled fish known as *tikin xik* (page 174). Be aware that the *chiles habaneros* are extremely hot. I strongly recommend wearing latex gloves if you have particularly sensitive skin and to be very careful not to rub your eyes or touch other vulnerable parts of your body.

Serve the dip at room temperature with crispy *totopos* (page 21).

Makes about 2 cups

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| 1½ cups small unhulled raw pumpkin seeds | • Heat a heavy skillet over medium-low |
| 1 pound ripe tomatoes (about 3 medium),
roasted and peeled (page 18), then roughly
chopped, or 1 (14½-ounce) can fire-roasted
tomatoes, drained | • heat. Pour in the pumpkin seeds and heat,
stirring constantly, until they begin to puff
up and start to pop. Do not let them turn
brown. Pour the seeds onto a plate and let
cool, then grind finely in a spice grinder or
coffee grinder. |
| 1 chile habanero, stem, seeds, and membranes
removed and roughly chopped | • Put the tomatoes, chile, onion, orange
juice, and salt in a blender or food proces-
sor and process or pulse until a smooth
sauce forms. Pour into a small bowl and
stir in the ground seeds and most of the ci-
lantro. Taste and add more salt if needed. |
| ½ medium white onion, roasted (page 18) and
roughly chopped (about ¼ cup) | • Let sit for about 30 minutes before serving
to allow the flavors to meld. Sprinkle on
the remaining cilantro just before serving. |
| ¼ cup freshly squeezed bitter orange juice
(page 26) | |
| ½ teaspoon sea salt | |
| ¼ cup finely chopped fresh cilantro, thick stem
ends removed | |

Fig. 3: A recipe from *La Cocina Mexicana* for pumpkin-seed dip, a great appetizer, containing spicy habanero peppers and fresh cilantro (Tausend, 2012).

CALDO DE TICHINDAS

Mussel Broth

This shellfish soup is from El Ciruelo, an isolated village on Oaxaca's northern Costa Chica populated primarily by descendants of African slaves. It calls for *tichindas*, which look like very small mussels, and *pitiona*, an aromatic herb, both of which can be difficult to find outside the region. But small mussels or even clams can be substituted for the *tichindas* and mint or epazote (or a combination of the two) can be used for the *pitiona*.

Antonieta Avila Salinas, one of the women I met in El Ciruelo, always has a bowl of *salsa de chiles costeños* (page 33) on her table when serving this soup for those wanting an additional fiery kick.

Serves 4 to 6 as a main course, or 6 to 8 as a first course

2 pounds small mussels	·	Scrub the mussels well under cold running
10 chiles puyas, stems, seeds, and membranes removed, then toasted (page 18)	·	water. Remove the "beard" from each shell
4 cloves garlic, roughly chopped	·	and set aside.
10 fresh pitiona, mint, or epazote leaves or equal parts mint and epazote leaves, roughly chopped	·	Soak the chiles in a bowl with 3 cups very
½ cup masa harina (page 19)	·	hot water until soft, about 10 minutes.
2 teaspoons sea salt	·	Remove the chiles, reserving the water,
Salsa Purépecha de Chiles Puyas (page 39)	·	and tear into smaller pieces. Put the chile
2 or 3 limes, preferably Key lime, quartered	·	pieces, soaking water, garlic, and <i>pitiona</i>
	·	in a blender and process until smooth.
	·	Pour into a large <i>cazuela</i> or Dutch oven
	·	and bring to a simmer over medium-low
	·	heat.

In a bowl, stir the masa harina into 2 cups cold water until thoroughly combined, then slowly add to the simmering chile mixture while stirring constantly. Raise the heat to medium-high, add 3 more cups water and the salt, and bring to a boil. Add the mussels, lower the heat, and simmer just until they open, usually within a few seconds but no more than a couple of minutes.

Remove from the heat and throw away any mussels that failed to open. Ladle the soup into warmed bowls. Put on the table with bowls of the salsa and of the limes to squeeze on for their essential sour flavor.

Fig. 4: A recipe from *La Cocina Mexicana* including epazote and mint to flavor a seafood dish. Pitiona, or Bushy Lippia/Matgrass, is another plant native to Texas and Central America; it is often used in moles (Tausend, 2012).

BETABELES EN ESCABECHE

Pickled Beets

When I was on an early scouting trip to Mérida with Diana Kennedy, our taxi driver, on learning that we were interested in regional Yucatecan foods, drove us to his favorite *botanero*, La Reina—unfortunately, now closed—where we had endless small dishes of appetizers, all for the cost of a couple of glasses of tequila. These deep red pickled beets were one of my favorites, along with similar versions of Ensalada de Papas Glaceadas con Queso (page 54) and crispy Codzitos (page 66).

Serves 6 to 8

4 red beets, with some stem attached, well scrubbed	Heat the oven to 325°F.
1 red onion, thinly sliced	Put the beets in a small baking dish,
$\frac{3}{4}$ cup mild white vinegar such as vinagre de piña or diluted unseasoned rice vinegar (page 50)	sprinkle them with $\frac{1}{4}$ cup water, and cover the dish with aluminum foil. Bake until soft when lightly squeezed, about 1 hour.
$\frac{3}{4}$ cup freshly squeezed orange juice	If they are not quite soft, continue to bake for another 15 to 20 minutes. The timing will vary depending on the age and size of the beets.
$\frac{1}{4}$ cup Spanish dry (fino) sherry	Remove the beets from the oven, drop them into a bowl of ice-cold water to cover, and let cool until they can be handled. Retrieve them from the water and peel away the skins. Cut the beets vertically into $\frac{1}{4}$ -inch-thick rounds. If you have used large rather than medium beets, cut the slices in half. Place the slices in a glass bowl.
$\frac{1}{4}$ cup freshly squeezed lime juice	Using only the center rings of the onion, none larger in diameter than the beet
1 teaspoon sea salt	
$\frac{1}{2}$ teaspoon black peppercorns	
$\frac{1}{2}$ teaspoon whole allspice	
$\frac{3}{4}$ teaspoon dried oregano, preferably Mexican	
$\frac{1}{4}$ teaspoon ground coriander	
1 teaspoon brown sugar	
4 narrow strips scrubbed orange peel, white pith removed	
1 tablespoon extra virgin olive oil	
Freshly ground black pepper	

slices, measure out about $\frac{1}{2}$ cup and reserve the remaining slices for another use. Add the $\frac{1}{2}$ cup onion rings to the beets and pour in the vinegar, orange juice, sherry, and lime juice. Lightly stir in the salt, peppercorns, and allspice. Rub the oregano between your fingers until broken up and stir into the beets along with the coriander, sugar, and orange peel.

Fig. 5: A recipe from *La Cocina Mexicana* for pickled beets, popular in the southeastern Yucatán peninsula of Mexico, includes both oregano and cilantro for flavor (Tausend, 2012).

Curative Properties

Throughout the centuries, people across the globe have utilized herbs for a plethora of curative health effects. In some parts of the world folk wisdom and knowledge of herbal remedies persist in influencing modern culture, but much of the developed world has abandoned holistic herbal remedies of tradition with the advent of synthetic medicines like antibiotics. With recent trends focusing on more holistic remedies and wellness-centered approaches to health, there has been a major resurgence of the popularity of medicinal herbs. Since knowledge of how to use herbs as medicine is typically not passed down through generations in modern Western culture, it is important for individuals to understand what herbal supplements have been found to be effective and which ones are deceptively marketed or have adverse interactions with prescription drugs. The supplement industry is largely unregulated by the Food and Drug Administration, so it is often up to the consumer to be aware of what exactly they are purchasing.

Herbal and folk remedies of ancient civilizations were well-documented and present in cultures across the globe. In Mexico, the Aztecs practiced herbal medicine years before Jamestown was even established (Neff, n.d.); they recorded images of the plants in codices, or catalogues (Stuart, n.d.). When the Spanish arrived on Mexican shores, these practices were regarded as heresy against the Catholic faith, and many codices were destroyed with the conquering and enslavement of the Aztec people. However, with the efforts of two missionaries, the Codex de la Cruz-Badiano (named for the original author and translator) became the first bilingual publication of the New World, written in both Náhuatl (the native Aztec tongue) and Latin (Stuart, n.d.). In present day Mexico, lay healers utilize approximately 3000-5000 plants for

several reasons: to deal with minor illnesses in lieu of a doctor, to maintain a level of autonomy and if medical care is inaccessible (Neff, n.d.).

Modern lay healers fall into a hierarchy in Latin American culture, individuals would not immediately seek out a *curandero/a* (the ultimate folk healer), but first consult a relative or neighbor. If they prove unable to treat the ailment, they will recommend a specialist, a *yerbero/a* (herbalist), a *sobador/a* (massage therapist) or a *patera* (midwife/child care). If the issue persists a *curandero/a*, who is trained in multiple methods of folk healing, can be called on. They don't normally request payment although gifts are accepted; many are trained as family tradition but some receive the gift later in life. 80% of the conditions a *curandero/a* treats are actual medical disorders, but most will refer a modern doctor if the problem is beyond their scope (Neff, n.d.).

Herbal remedies and holistic healing of ancient civilizations were categorized by whether they fell under a "hot" or "cold" cure – hot remedies treat cold diseases, vice versa. This dichotomy of hot and cold is a widespread theme in the ancient world; it appears in Chinese culture as Yin and Yang symbolism and in Burmese and Indian folk medicine as well. In the West, Hippocrates posited that the body consisted of four humours: blood (moist & warm), yellow bile (warm & dry), black bile (cold & dry) and phlegm (cold & moist). A balance of these characterized a healthy body (Ingham, 1970). Herbs are assigned either hot or cold based on how long they spend in the sun (hot), how much water exposure they receive (cold), or the sensation produced when ingested. Hot illnesses, like hypertension, diabetes and pregnancy, manifest through vasodilation and increased metabolic rate, while cold illnesses, like menstrual cramps, pneumonia and colic, are characterized by vasoconstriction and decreased metabolic rates (Neff, n.d.). Adherence to the balance of hot and cold is even considered in traditional Mexican

cooking – at a fiesta, *mole* (very hot) is typically consumed before and after cold courses of chicken and rice respectively (Ingham, 1970).

Despite the long history of use, many of these herbs have gone largely unstudied. While traditional remedies for folk diseases such as *mal de ojo* (the evil eye) or *el dañe* (the danger) – rubbing an egg on an infant’s body to soak up the heat transmitted from envious attention (Ingham, 1970) – may seem to modern Westerners superstitious or even ritualistic, this should not discredit all folk lore as a whole. Oregano, a hot herb used for menstrual cramps in Mexican folk healing (Neff, n.d.), has been shown to be an effective agent against dysmenorrhea (pain during menstruation) when used as aromatic massage oil on lower abdomen (Ou, Hsu et al, 2012). However, more commonly known folk remedies that have been studied, such as using garlic to lower blood pressure in hypertensive patients, lack definitive results and sufficient evidence to stand up to the scientific method (Stabler, Tehani et al, 2012). Other popular Mexican herbal remedies, like Eucalyptus, used to treat respiratory issues (coryza, asthma, bronchitis), are also lacking in sufficient data to come to an appropriate conclusion. Some studies suggest eucalyptol, present in eucalyptus oil, can be effective at breaking up mucous in patients with asthma and allowing for lower dosages of steroids; however it is not suggested that patients should rely on this without a doctor’s approval (NIH, 2012). Many of the herbs, like wormwood and aloe vera, ingested as purgatives (laxatives, etc), while effective, have been shown to be dangerous to one’s health (Neff, n.d.).

Chamomile, or in Spanish *manzanilla*, was widely used throughout ancient herbal remedies. Traditional uses reflect anti-inflammatory, antioxidant, mild astringent and healing properties – it was used for wounds, ulcers and eczema as well as respiratory inflammation, nausea and back pain. Current research indicates the mechanisms and bioactive compounds

which may be responsible for providing relief (Srivastava, Shankar & Gupta, 2010). Scientists identified 1-2% of volatile oils, often converted to flavonoids, which penetrate the skin's surface and act as a topical antiphlogistic (anti-inflammatory). In cancer research, it has been shown to have growth inhibitory effects against skin, prostate, breast and ovarian cancers, initiating apoptosis (programmed cell death) in tumorous cells but not normal ones. In cardiovascular disease, routine consumption of flavonoids (as in food or tea) was significantly inversely related with mortality from coronary heart disease and inversely related with the occurrence of myocardial infarctions (heart attacks). It has even been shown to stimulate the immune system! Despite the benefits that have been observed, more comprehensive studies of every mechanism and effect need to be carried out, and individuals should always exercise caution and restraint when considering herbal remedies.

Conclusion

In light of contemporary, pervasive global issues like climate change, poverty and hunger and chronic illness resulting from lifestyle, the necessity in adopting self-sufficient, restorative (both to human health and the environment) practices such as gardening seems undeniable. While completely self-sufficient communities may require more time to build, encouraging interest in the larger scope of possibilities can begin with the simple practice of herb gardening. Herbs represent a multi-faceted aspect of Mexican culture significant in cooking, medicine and landscape. The commercial food industry and consumer culture have separated the individual from the complex and interconnected cycle of life. In the wake of the modernized agriculture and food industry the environment is ravaged, society robbed of rich cultural traditions, populations plagued by chronic illness, starvation amidst abundance.

Learning how to cultivate, cook with and possibly even cure with herbs not only serves to diversify and preserve natural ecosystems, enrich cooking knowledge and practices and promote good health, but can also introduce individuals to culture and inspire curiosity. Instead of examining the details of each subject independent of each other, future studies may seek to analyze how all of these factors are at play in conjunction to shape the existence humans experience. A better understanding of how these parts (gardening, food choices, and alternative medicines) contribute to the whole will ultimately lead to a deeper appreciation for complex cultural constructs and the utility in human diversity. Embracing traditional wisdom and marrying it to modern scientific approaches can provide insight to social and environmental problems, perhaps even solicit solutions.

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