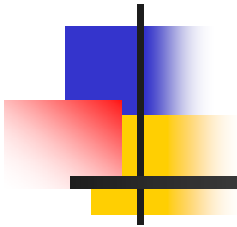


**University of Texas at El Paso**

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**Cooperative Pharmacy  
Program**

# **Medicinal Plants and Herbal Products**



**Their Presence and Importance In  
Ciudad Juarez and El Paso**

**Armando Gonzalez Stuart, Ph.D.**



# Acknowledgements

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We would like to thank Ms Sarah Schoofield, of the *Mexico Desconocido* magazine, Mexico City, for her kind permission to include drawings, maps and photographs of medicinal plants from Mexico. Other photos/illustrations appeared in *Arqueologia Mexicana* magazine, Vol. 7, number 39, 2000.



# **Important aspects**

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- **Products available**
- **What they contain**
- **How they are used**
- **Origin**
- **Efficacy (does it really work ?)**
- **Safety (toxicity / interactions ?)**



# Medicinal plants

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- Mexico and the U. S. share a very extensive common border
- From Calexico to Brownsville, many herbal products are employed
- The El Paso / Cd. Juarez area is one of the most important and populated international borders in North America

# Mexico and the U.S. share an extensive common border

Photo courtesy of Mexico Desconocido Magazine





# Medicinal plants

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- Every day thousands of people cross the border
- Some introduce medicinal or culinary plants into the U.S.
- Our knowledge of some of those plant species is very limited



# **Medicinal Plants**

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- **Mexico has an ancestral tradition of herbal healing practices**
- **It also has the world's third largest medicinal herbal repertoire, after China and India, respectively**



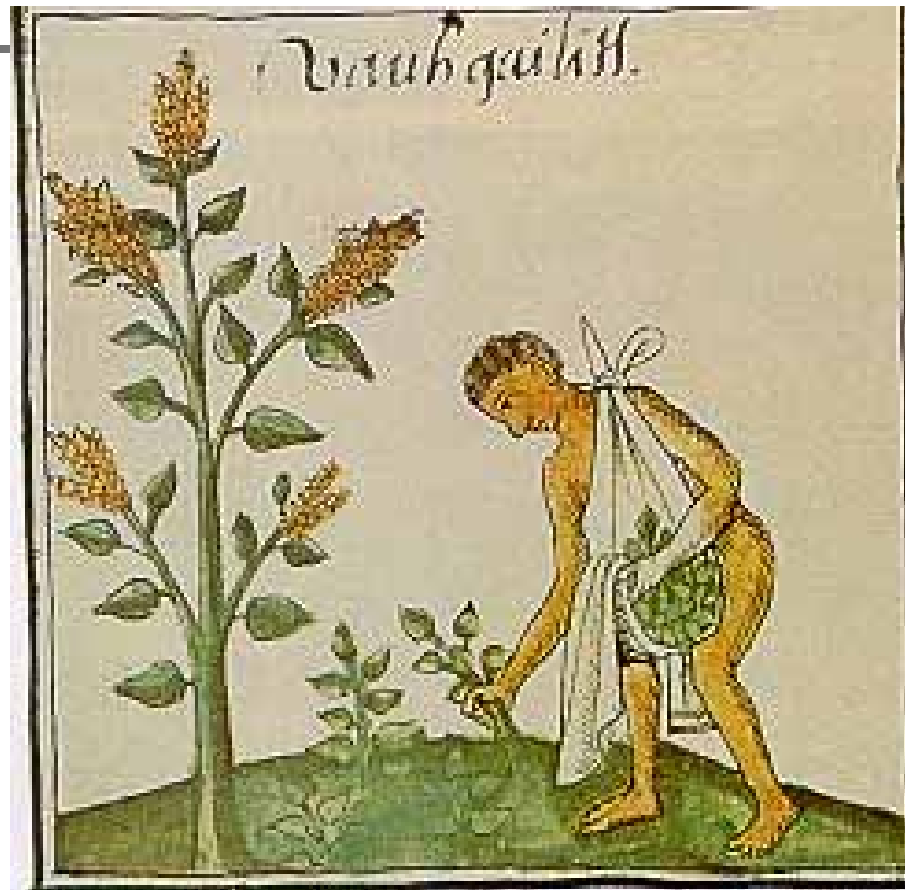


# Herbal Repertoire by Country

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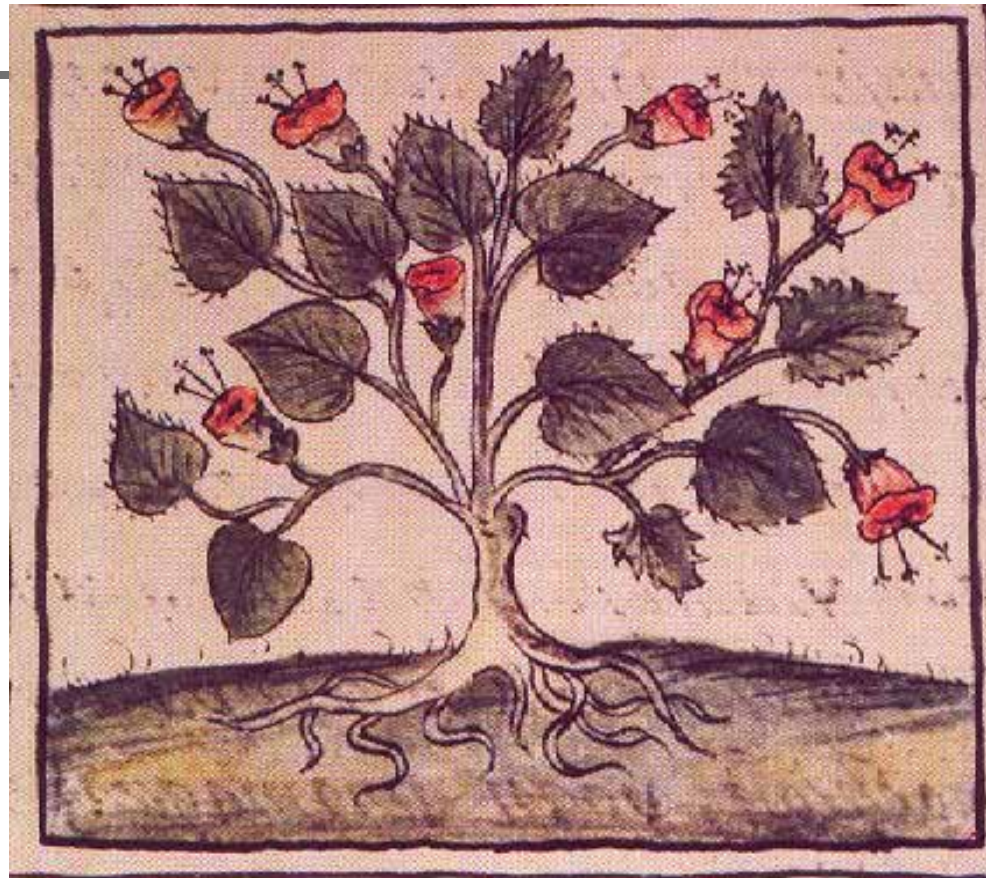
- **China: Approximately 12,000 species**
- **India: Approximately 9,000 species**
- **Mexico: From 3,000 – 5,000 species**

Photo courtesy of Mexico Desconocido Magazine



Collecting indigenous healing herbs

Photo courtesy of Mexico Desconocido Magazine



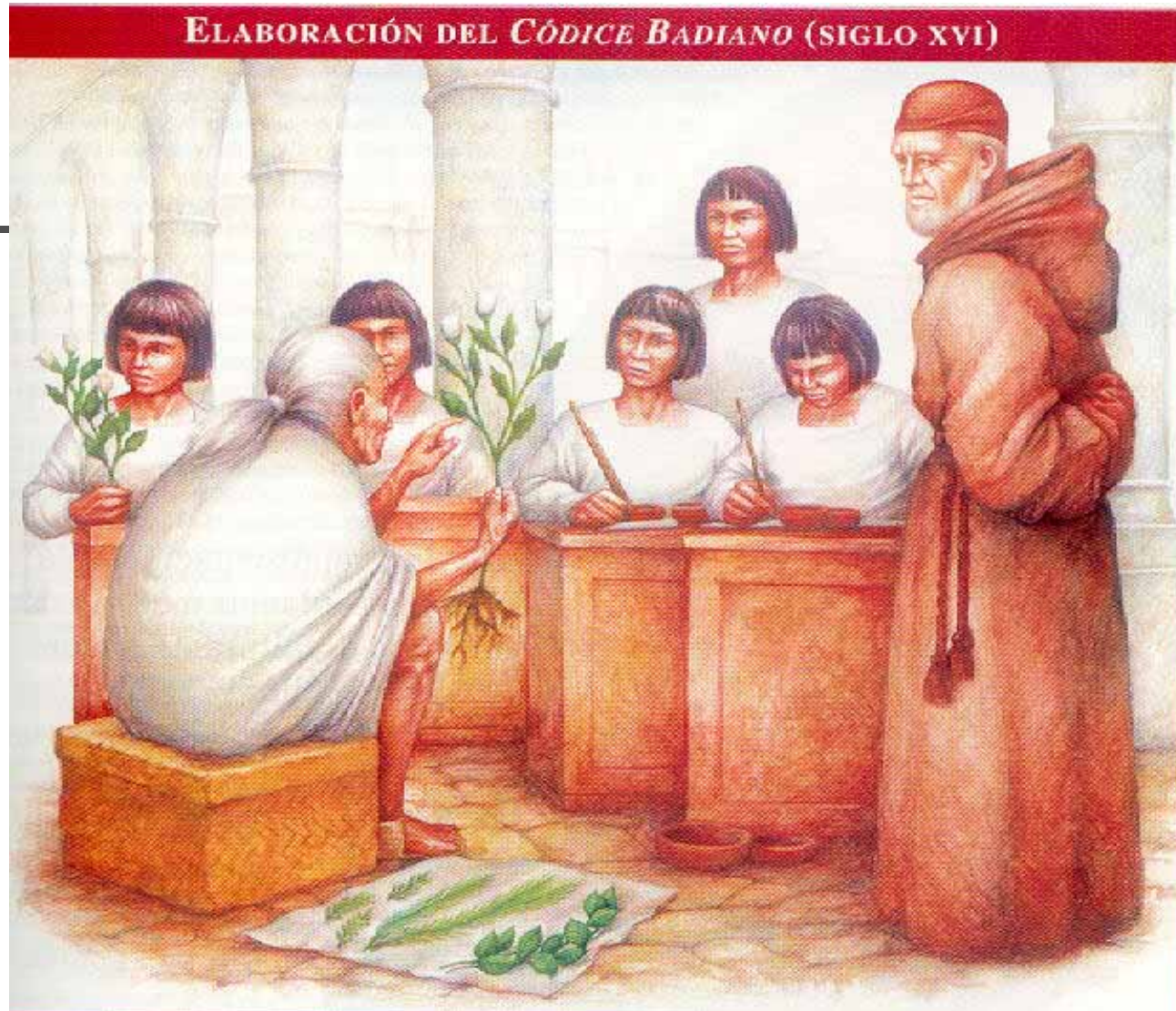
**Drawing in Medicinal Plant Codex**



**Burning of “heretical” books was common**

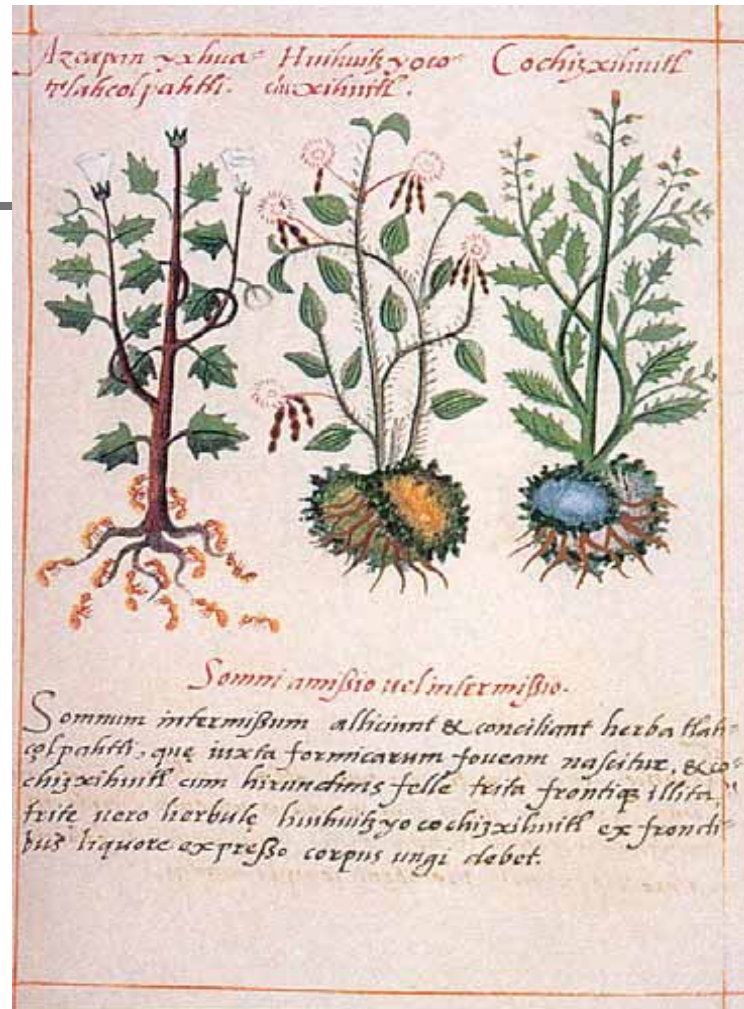


Illustration by Raul Cruz/Raices-Arqueologia mexicana,© 2000



Elaboration of a codex – XVI century

Photo courtesy of Mexico Desconocido Magazine



**Plant names in Latin and Nahuatl**



Photo courtesy of Mexico Desconocido Magazine



**Some plants included in the codex are still used today**



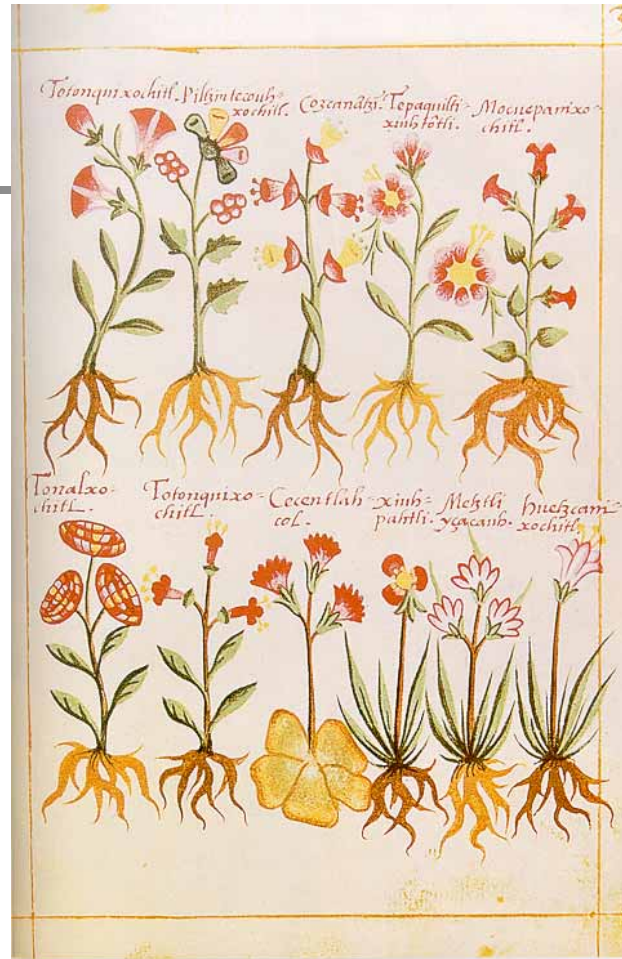
# **Medicinal Plants**

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- **Approximately 3,000 species of plants are used medicinally in Mexico by 62 different ethnicities**
- **Some 300 are commonly used**
- **Only 30 have been studied in depth**



Photo courtesy of Mexico Desconocido Magazine



**The codex was written in Latin and Nahuatl**

Photo courtesy of Mexico Desconocido Magazine



Healing as a spiritual art

Photo courtesy of Mexico Desconocido Magazine



Healing rituals are rich in symbolism



# **Medicinal Plants**

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- **Mexico owes its great biodiversity to its diverse climatic regions and mountainous terrain**
- **Some plants used in border cities come from far away places, like Central Mexico or the tropics**

Map courtesy of Mexico Desconocido Magazine

# MEXICO



Diverse climatic and physiographic regions



# Medicinal Plants

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- **Aside from language and certain customs, medicinal plants are part of the border culture**
- **Some herbs are continually introduced in varying amounts**



# **Medicinal Plants**

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- **Are traditionally used by Mexican and Mexican American populations**
- **Some plants are equally popular on both sides of the border**
- **Healing practices can be similar**

Photo courtesy of Mexico Desconocido Magazine



***CURANDERA - HEALER***



Photo courtesy of Mexico Desconocido Magazine



Traditional way of drying herbs



Modern herbal presentations



Photo courtesy of Mexico Desconocido Magazine



Aztec marketplace



# Medicinal Plants

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- Some species have been used for centuries (Chamomile, Damiana) in both Juarez and El Paso
- Many are not native to this region
- Others have been incorporated fairly recently (Ginkgo, St. John's Wort, Echinacea, Uña de Gato, Kava)

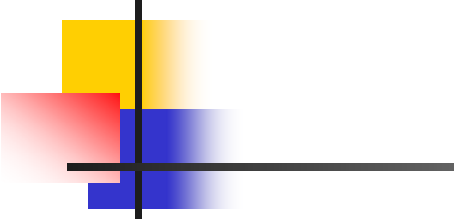


Photo courtesy of Mexico Desconocido Magazine



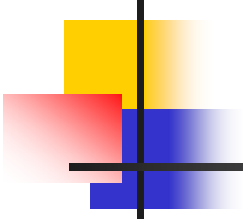
**DAMIANA**

Photo courtesy of Mexico Desconocido Magazine

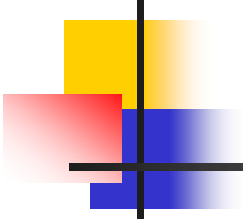


**CHAMOMILE**



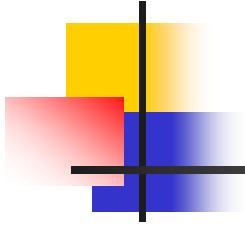


St. John's Wort



**Echinacea**





**Ginkgo**

Photo: Raintree Nutrition, Austin, Texas

# Cat' claw



***Uncaria guianensis***

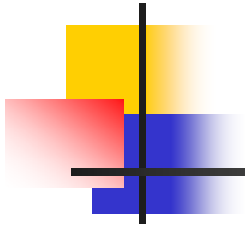


Photo: Steven Foster



**Kava**

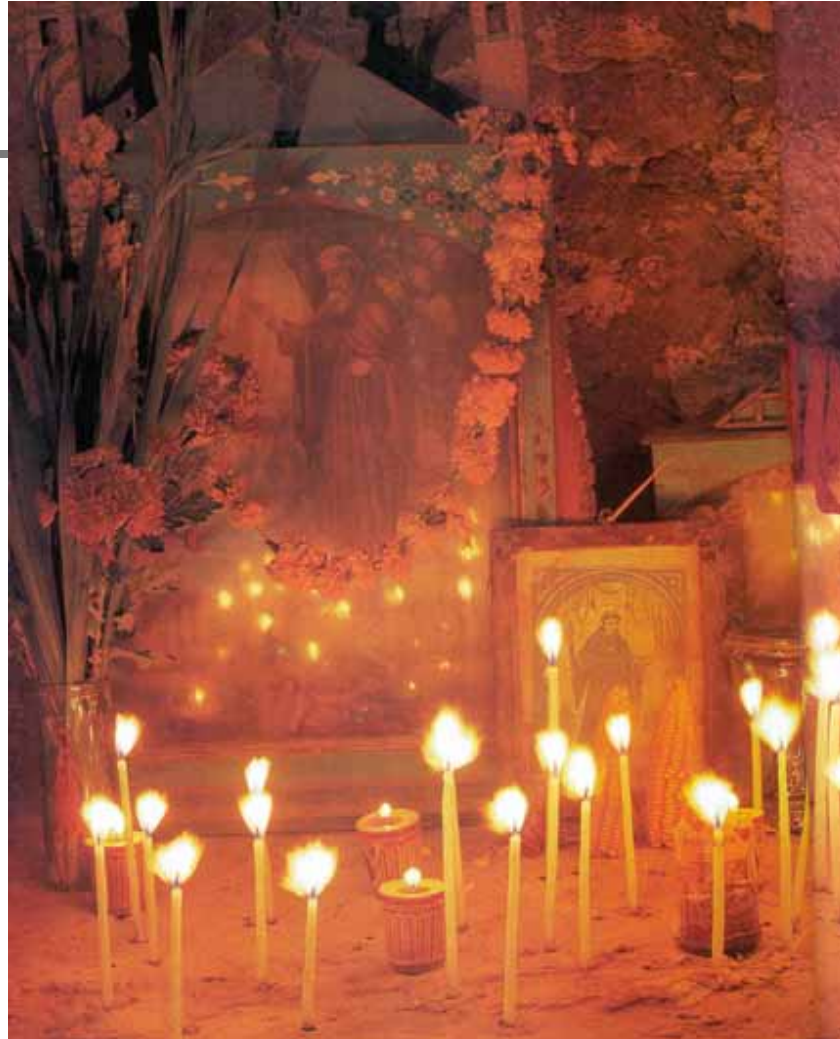


# **Medicinal Plants**

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- **The use of medicinal plants and other alternative therapies is intertwined with religious beliefs**
- **At times, Christian rites are combined with pagan rituals**

Photo courtesy of Mexico Desconocido Magazine



Plants have a mystical significance

Photo courtesy of Mexico Desconocido Magazine



Peyote is employed in religious ceremonies

Photo from Plants of the Gods by R. Schultes and A. Hoffman



Peyote and Huichol culture



# Medicinal Plants

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- Some alternative therapies involve healing practices from many countries, such as :
  - India (Ayurvedic and Unani)
  - China and Tibet
  - Japan (Kampo) *i.e.* mushrooms
  - Mexico



*Photo: Mexico Desconocido Magazine*



Sonora market – Mexico City

*Photo: Mexico Desconocido Magazine*



**Medicine Man from Durango**



# Medicinal Plant Use

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- Employed by all age groups (babies to the elderly)
- Usually the crude drug (tea) is cheaper than regular medication
- Reputed to have fewer side effects
- Considered natural and thereby safe (many exceptions exist)

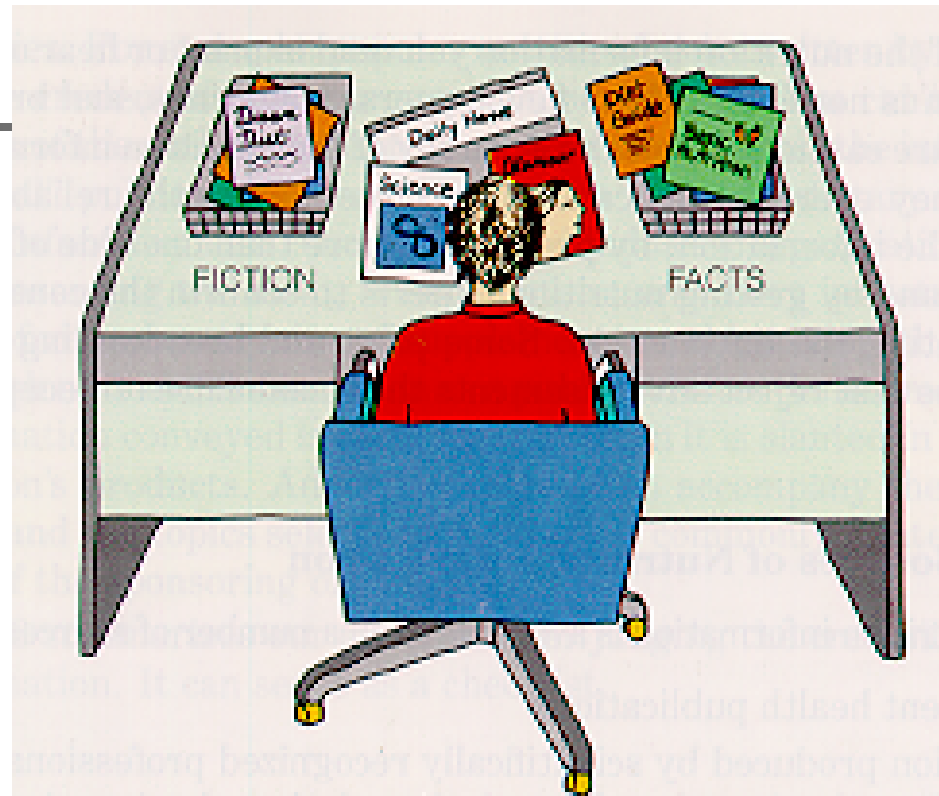


# Medicinal Plants

---

- Very important in domestic and international trade (globalization)
- Herb products and supplements are a lucrative activity
- “Back to Nature” trend is *in vogue* worldwide
- Much misinformation exists

D. Brown: The Science of Human Nutrition, 1990.



We must select factual information





# **Medicinal Plants**

---

- **Chinese herbs are gaining foothold**
- **Complex herbal mixtures are a common feature of CTM**
- **Many plants from India are now becoming popular (Ashwagandha)**
- **Factual information is scarce**

Photo: Tecnobotanica Azteca, Mexico



Herb combinations are common





# Medicinal Plants

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- Many of these plants have not been studied adequately
- Some may indeed have important medicinal application
- Their interactions with drugs are poorly understood (unknown)



# Medicinal Plants

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- Some herbal companies are *obscure* in their operations
- Their origin is difficult to trace
- Herb quality is often undependable
- Their technical knowledge may be obsolete or incomplete



# **Medicinal Plants**

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- **Medicinal Plants are Crude Drugs**
- **Great variability can exist in their therapeutic or active principles**
- **Depending on their place of origin and variety (soil type, climate, etc.)**



# Medicinal Plants

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- **Standardization of crude drugs is virtually impossible**
- **Transportation, storage and handling all affect quality in some way**
- **Some are stored under unsanitary conditions (health hazard)**



# **Medicinal Plants**

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- **Quality and reliability rely strictly on the supplier and distributor**
- **Adulteration and mislabeling are not uncommon with some herbal products in many countries**

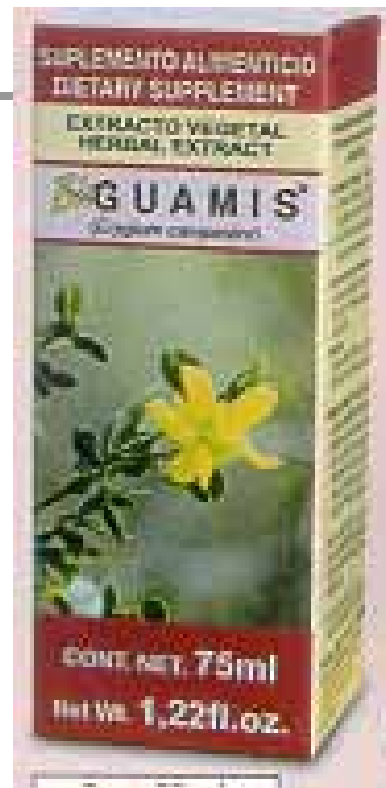


# Medicinal Plants

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- Few qualified professionals exist
- Labels may contain erroneous information, mistaking species
- Common names of plants vary from region to region, creating confusion

Photo: Tecnobotanica Azteca, Mexico



# Incorrect classification





# Medicinal Plants

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- **Employing plants only by common name can be risky (toxicity ?)**
- **The plant has to be examined carefully (microscope)**
- **Most plants are sold in bits and pieces, making I.D. difficult**

*Photo: Mexico Desconocido Magazine*



**Crude drugs have variable quality**

*Photo: Mexico Desconocido Magazine*



Mislabeling

*Photo: Mexico Desconocido Magazine*



Incorrect classification



# Medicinal Plants

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- Both in the U.S. and Mexico, clerks with no botanical experience may dispense the herbal drugs
- Some mainly rely on catalogues that state commercial information with little or no technical backup



# Medicinal Plants

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- Ginseng, Cat's Claw, Echinacea and others may be adulterated with inferior quality plants
- In some cases, neither the consumer nor the provider are fully aware of this



*Photo: Mexico Desconocido Magazine*



Crude drugs are of variable quality





# Medicinal Plants

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- **Because of lack of reliability, some consumers and physicians are wary of herbal products**
- **Variability in quality explains variability in efficacy**



# Medicinal Plants

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- Sometimes, adulterations can cause serious health problems
- The proposed plant may not be to blame (incorrect classification)
- Other plants, *fillers*, drugs (cortisone), rodent feces, bacteria, insects, can be the real culprits



*Aristolochia spp*

Photo Courtesy of Mexico Desconocido Magazine



Sidewalk marketplace

Photo courtesy of Mexico Desconocido Magazine



***Hierberia* or herbal store in Mexico**

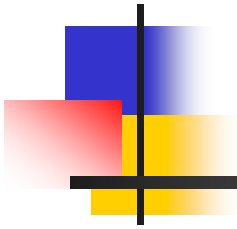


# Medicinal Plants

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- **Some companies, especially in Western Europe, are very strict in terms of quality (standardization)**
- **The U.S. and Mexico are following the same trend, but much remains to be seen in terms of seriousness**

# A Time For New Paradigms



**Science must evaluate  
emprirical herbalism**





## **Fact versus fiction**

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- **More funds should be allocated to research medicinal plants**
- **Most of the world's flora has not been studied adequately**
- **"Paraherbalism" denotes misinformation about herbs**
- **It should be replaced by fact**



# Phytotherapy

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- **Complementary more than “alternative”**
- **Scientific basis vs. “paraherbalism”**
- **Included in medical studies at some universities in Europe**
- **It should be included in medical and nursing curricula in the U. S.**



# **Phytotherapy**

---

- **40 % of prescriptions in Germany are based on herbal products**
- **Commission E Monographs**
- **Retains factual information and discards the rest**

Photo: Soria Natural, Spain.

# European Phytotherapy



## Modern laboratory in Spain

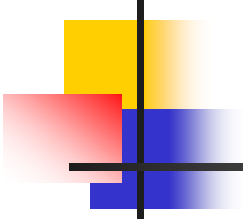


Photo: Soria Natural, Spain.

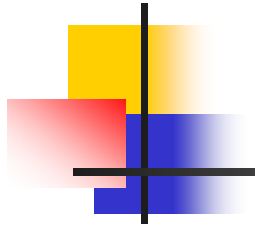


# Quality Control

Photo: Soria Natural, Spain.



# Standardized Products



# Pseudo-Standardization

---

- **Active principles not mentioned**
- **Label specifies only a certain % of leaf, flower, root (limited value)**
- **Correct dose unknown**



Photo: Tecnobotanica Azteca



Pseudo standardization



# Medicinal Plants

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- Herb combinations may be incompatible (tannins/alkaloids)
- Many herbs in one product are not often desirable (exceptions exist)
- They do not always improve efficacy (inadequate information)



# Interactions

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- **Within herbal combinations**
- **Herb and medication**
- **Potentiation (grapefruit juice)**
- **Interference with drug absorption**
- **Very little is currently known about their pharmacokinetics**



# Medicinal Plants

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- **Urgent need to study prospective sources of medicinal agents**
- **Extinction threatens many plants**
- **The time element is crucial**



# Extinction of Medicinal Plants

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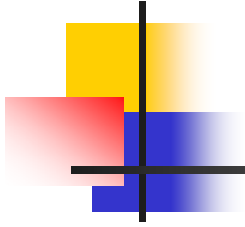
- **Human population expansion**
- **Overexploitation (commercialism)**
- **Pollution and climate changes**
- **Deforestation and livestock grazing**



# **Medicinal Plants Commonly Employed**

---

- **Some are part of tradition**
- **A few have proven efficacy**
- **Others are new**
- **Some may interact with medicines**
- **Others can be toxic**
- **Always ask patient if he or she is taking herbal products**



# A Brief Selection of Medicinal Plants Employed In The Cd. - Juarez - El Paso Area



## *Aloe vera* - Sabila

- Gel (burns, cuts) used topically
- Latex is laxative
- Treat ulcers
- Against cancer
- Avoid in pregnancy



# Boldo

- Gall bladder and liver ailments
- Avoid in pregnancy
- Avoid in small children
- Toxic Essen. oil

Photo courtesy of Mexico Desconocido Magazine



# Chamomile or Manzanilla

- **Anti-inflammatory**
- **Spasmolytic**
- **Infant colic**
- **May induce labor in concentrated form**
- **May cause allergic reaction (rare)**

Photo courtesy of Mexico Desconocido Magazine



# Creosote Bush, Chaparral

- Athlete's foot
- Cancer (NDGA)
- Kidney stones
- G. bladder stones
- Urinary infections
- Venereal disease

Photo courtesy of Mexico Desconocido Magazine



# Creosote Bush

- NDGA, active principle
- Free radical scavenger
- Proven antifungal compounds





# Creosote Bush

- Non-concentrated infusion internally
- Concentrated forms not recommended
- Pills and capsules may cause hepatic and renal damage



Photo: Tecnobotanica Azteca



Creosote bush tablets may be harmful



# Codo de Fraile

- Hemorrhoids topically
- Seed is very toxic
- Circulatory problems
- Used for “weight loss” (bitter almond ?)
- Avoid use



# Horsetail or Cola de Caballo

- Urinary ailments
- Antiseptic
- Heal abrasions
- High silica content
- Arthritis
- Thiaminase

Photo courtesy of Mexico Desconocido Magazine



# Damiana

---

- **Increase libido**
- **Sterility**
- **Fatigue (tonic)**
- **Colds**
- **Body aches**
- **Don't mix w/alcohol**
- **Avoid in pregnancy**

Photo courtesy of Mexico Desconocido Magazine





## Doradilla (Resurrection plant)

Photo courtesy of Mexico Desconocido Magazine

- **Urinary ailments**
- **Cystitis**
- **Kidney stones**
- **Usually safe**
- **Avoid in pregnancy**



# Epazote (Wormseed)

- Anthelminthic
- Condiment (safe)
- Causes uterine motility (avoid in pregnancy and lactation)

Photo courtesy of Mexico Desconocido Magazine



# Epazote de zorrillo

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- **Anthelminthic**
- **Expectorant**
- **Coughs**
- **Stomach and liver ailments**
- **Toxic, avoid use**

Photo courtesy of Mexico Desconocido Magazine





# Estafiate (Wormwood)

- **Stomachache**
- **Diarrhea**
- **Worms**
- **Rheumatism**
- **Avoid in pregnancy and lactation**

Photo courtesy of Mexico Desconocido Magazine





# Gordolobo (Mexican)

- Respiratory problems (asthma)
- Coughs
- Similar properties as Mullein (*Verbascum*)
- Lumbago

Photo courtesy of Mexico Desconocido Magazine



# Gordolobo (European Mullein)

- Similar healing properties as Mexican gordolobo
- Belongs to a different plant family
- Often mistaken for the Mexican plant



# Hierba del Sapo

- Urinary problems
- Cystitis
- Kidney stones
- Urinary infections
- Efficacy unproven
- Kidney irritation ?
- Avoid in pregnancy

Photo courtesy of Mexico Desconocido Magazine



# Cactus (Nopal)

- Foodstuff
- Diabetes
- Weight control
- Fiber
- Mucilage
- Unknown active principle (fresh)

Photo courtesy of Mexico Desconocido Magazine



# Rue or Ruda

- **Menstruation** (tea)
- **Digestive** (tea)
- **Rheumatism** (topical)
- **Earache** (topical)
- **Abortifacient**
- **Toxic alkaloids**
- **Avoid use**

Photo courtesy of Mexico Desconocido Magazine





# Toloache (Datura)

- Asthma (smoked)
- Rheumatism
- Tropane alkaloids
- Seeds are toxic
- Hallucinogenic
- Magic rituals
- Avoid use

Photo courtesy of Mexico Desconocido Magazine



# Valerian root

- Sedative
- Nerves / insomnia
- Capsules or tinctures
- Mixed with other plants (hops, passion flower, etc.)

Photo courtesy of Mexico Desconocido Magazine



# Guareque, Wereke

- Root
- Diabetes
- Heal wounds
- Topical antiseptic
- Raw
- Capsules
- Efficacy unknown
- Active principle ?

Photo courtesy of Mexico Desconocido Magazine





# Zapote Blanco

- Blood pressure
- Hyper or Hypotensive
- Dose
- Sedative
- Seeds are toxic
- Avoid in pregnancy

Photo courtesy of Mexico Desconocido Magazine



# Zoapatle (Cihuatlatli)

- Induces labor
- Contraceptive
- Reduces sperm motility
- Abortion
- May cause harm to newborn

Photo: Plantas de Mexico Al Mundo





## **Medicinal plants - Conclusion**

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- **Some may be very useful in medicine if properly used**
- **Thousands of people use them along the U.S. / Mexico border**
- **Many need to be studied in depth**
- **The more we know, the better for patient and physician alike**

Photo courtesy of Mexico Desconocido Magazine



**Thank You For Your Attention**