



## Preventing Cognitive Decline

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Executive Director  
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## Upcoming AHG Webinars ALL FREE for AHG Members

1. January 15 Song-First Aid
2. February 10<sup>th</sup> Bob Linde-Beginning Chinese diagnostics
3. March 12 Camille Freeman- fertility and business building
4. April 7 Patricia Kyrtisi Howell- Herbalist Mentorship
5. April 16 David Winston
6. May 7 Steven Horne
7. June 11 Christopher Hobbs-The role of inflammation as the major factor in all disease
8. July 16 Leslie Alexander Oral Health
9. August 13 Kristi Shapla- Self Publishing for the Herbalist
10. Sept 17 Phyllis D. Light-Appalachian Herbalism
11. October 15 Rosalee de la Foret- Translating from Student to Practitioner
12. November 12 Trinitiy Ava- Herbal Skin Care for the 21<sup>st</sup> Century
13. December 10 Mimi Hernandez- Understanding Herbal Glycosides

## Dementia

Latin, from *de-* "without" + *ment*, "mind"

- Chronic loss of cognition usually affecting memory and causing confusion
- Estimated 5% to 8% of all people over the age of 65
- Estimated to affect as many as 50% of people in their 80s
- Alzheimer's causes 50% to 80% of dementia case
- There are many other causes of dementia, including vitamin B12 deficiency, chronic hypoglycemia, head injuries, liver cirrhosis, excessive drug use
- Differs from natural age-related cognitive decline

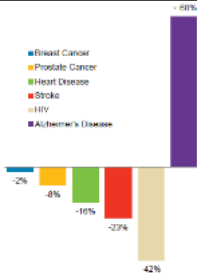
Raj C. Shah, MD, of the Rush Memory Clinic at Rush University Medical Center, in Chicago

## Alzheimer's disease

- Associated with degeneration and death in brain cells
- Involves a steady loss of both intellectual and social skills
- Progressive disease leading to premature death
- It was first described by German psychiatrist and neuropathologist Alois Alzheimer in 1906
- Most often diagnosed in people over 65 years of age although the less-prevalent early-onset Alzheimer's can occur much earlier

## Alzheimer's disease


- Affects 5.4 million Americans
- Affects one in eight people aged 65 and over
- Alzheimer's disease is the sixth leading cause of death in the United States.
- 1 in 3 seniors dies with Alzheimer's or another dementia.
- Deaths from Alzheimer's increased 68 percent between 2000 and 2010, while deaths from other major diseases, including the number one cause of death (heart disease), decreased.



Disease	Percentage Change (2000-2010)
Breast Cancer	-2%
Prostate Cancer	-8%
Heart Disease	-10%
Stroke	-23%
HIV	-42%
Alzheimer's Disease	+68%

## Alzheimer's disease – early warning signs

- Memory Loss
- Mood Swings
- Impaired Judgment
- Difficulty with familiar tasks
- Misplacing Things
- Wondering
- Confusion



## The Brain

- Your brain is your most powerful organ, yet weighs only about three pounds.
- It has a texture similar to firm jelly
- There are more than 100,000 chemical reactions happening in the human brain every second
- The human brain can process information as fast as 268 miles/hr. Information travels to the brain at different speeds because neurons are built differently.



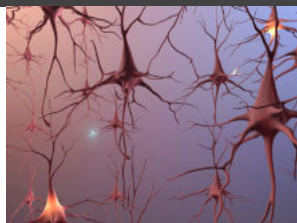
## Blood flow

- With 400 miles of capillaries with a surface area of 100 square feet the health of these vessel walls is paramount to proper brain function.
- A river of life constantly delivering oxygen, glucose, and nutrients to the brain – and removing toxins.
- Blood flow keep brain cells from overheating.
- Arteries carry about 20 to 25 percent of your blood to the brain with each heartbeat.
- The brain uses about 20 percent of the oxygen carried by the bloods and can use up to 50 percent of the fuel and oxygen carried by the blood when thinking hard.



## The Neuron Forest

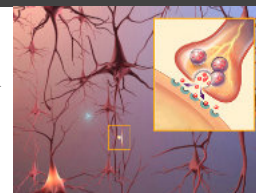
- An adult brain contains about 100 billion nerve cells, or neurons, with branches that connect at more than 100 trillion points.
- Signals traveling through the neuron forest form the basis of memories, thoughts, and feelings.
- Neurons are the chief type of cell destroyed by Alzheimer's disease



alz.org / braintour

## Communication

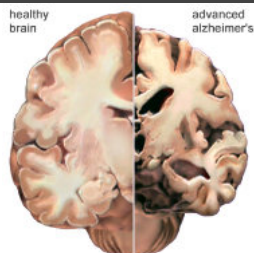
- Signals that form memories and thoughts move through an individual nerve cell as a tiny electrical charge.
- Nerve cells connect to one another at synapses.
- Tiny bursts neurotransmitters travel across the synapse, carrying signals to other cells.
- Scientists have identified dozens of neurotransmitters.
- Alzheimer's disease disrupts both the way electrical charges travel within cells and the activity of neurotransmitters.



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## Brain Size

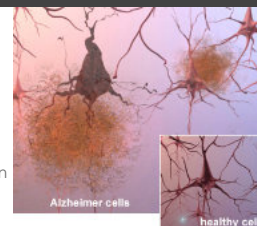
- Alzheimer's disease leads to nerve cell death and tissue loss throughout the brain. Over time, the brain shrinks dramatically, affecting nearly all its functions.



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## Tangles

- Alzheimer's tissue has many fewer nerve cells and synapses than a healthy brain.
- Plaques, abnormal clusters of protein fragments, build up between nerve cells.
- Dead and dying nerve cells contain tangles, which are made up of twisted strands of another protein.



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## Beta-amyloid

- Plaque form when protein pieces called beta-amyloid clump together.
- Beta-amyloid comes from a larger protein found in the fatty membrane surrounding nerve cells.
- Beta-amyloid is chemically "sticky" and gradually builds up into plaques.
- The clumps may block cell-to-cell signaling at synapses. And activate immune system cells that trigger inflammation and devour disabled cells.



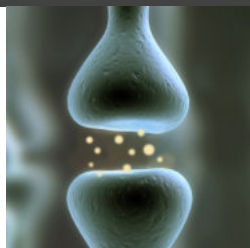
## Brain Food

- About two-thirds of the brain is composed of fats
  - Membranes – the Working Surface of the Brain is Made from Fatty Acids
  - Myelin, the protective sheath that covers communicating neurons, is composed of 30% protein and 70% fat.



## Essential Fatty Acids=Essential Building Materials

- To build brain cells you need fatty acids.
- Brain cells need a certain degree of flexibility to function properly. This is accomplished by a maintaining a balance of different types of fatty acids in the cell membrane.
- Omega 3 fatty acids make it easy for signals to cross the gap between brain cells



## Essential Fatty Acids=Essential Building Materials

- DHA (docosahexaenoic acid) is the most abundant fat in the brain.
- Loss in DHA concentrations in brain cell membranes correlates to a decline in structural and functional integrity of this tissue.
- Also, the oxidative damage that comes with age causes a decline in membrane DHA concentrations, and with it, cognitive impairment.



## Brain Blockers

- French researchers found that dietary trans fatty acids did indeed find their way into the myelin of brain cells, where they change the electrical conductivity of the cells.
- Trans fats replace the natural DHA in the membrane, affecting electrical activity of the neuron and disrupting communication.
- Furthermore, when diets were deficient in omega-3 ALA (alpha-linolenic acid), then the incorporation of trans fats was apparently doubled



1. Proceedings of the National Academy of Sciences, May 22, 2001  
2. Lipids 1994 April;29(4):251-8

## Brain Food

- A healthy brain is structurally composed of a 1:1 ratio of omega-6 to omega-3.
- Western diets, however, tend to have at least twenty times more omega-6 fats than omega-3 fats—an unhealthy ratio of 20:1.



## Brain Food

- Low blood levels of omega-3s are associated with:
  - brain shrinkage
  - mild memory loss
  - declines in cognitive function
  - higher risk of developing Alzheimer's disease and other forms of dementia.

■ "The lower the omega-3s, the poorer the performance,"

lead author Dr. Zaldy Tan, an Alzheimer's researcher at the University of California, Los Angeles.

## Brain Food

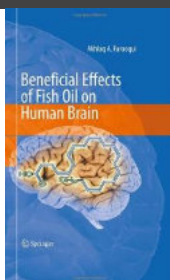
- In the Journal *Neurology* in February, researchers showed High blood levels of omega-3s are associated with:
  - bigger brain volumes
  - better performance on tests of visual memory and abstract reasoning
  - lower blood levels of beta amyloid.

## Brain Food

- Dutch study of cognitive function in males, aged 69-89, suggests that a high intake of omega-6 fatty acids is positively associated with cognitive impairment and high fish consumption inversely associated with cognitive impairment.

American Journal of Epidemiol 1997 January 1;145(1):33-41

International Journal of Developmental Neuroscience, July 2000



## Brain Food

### Seafood Boosted Brains of Early Humans-Study

- The bones of early modern humans found in Britain, Russia, and the Czech Republic (dated 20,000 to 28,000 years ago), showed that fish and seafood accounted for 30 - 50% of their dietary protein.
  - Supports a theory that DHA from seafood boosted the brain power of early humans.
- ""You don't need a big brain to collect mussels and clams, but living on them gives you the excess energy and nutrients that can be directed toward brain growth," Stephen Cunnane, a professor of nutrition at the University of Toronto

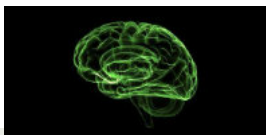


Proceedings of the National Academy of Sciences, May 22, 2001

## Brain Food

- One of the most common fatty acids in myelin is oleic acid, which is also the most abundant fatty acid in human milk and in our diet.
- Senior citizens who consumed extra-virgin olive oil as their main dietary fat were less likely to experience age-related cognitive decline, compared with people who ate less monounsaturated fats.

University of Louisiana, College of Pharmacy, ACS Chemical Neuroscience



## Brain Food

- Monounsaturated oleic acid is the main component of olive oil as well as the oils from almonds, pecans, macadamias, peanuts, and avocados.
- Extra virgin olive oil prevents abnormal brain tangle formation.
- Oleocanthal boosts production of enzymes that decrease the accumulation of beta-amyloid
- Oleocanthal associated with the consumption of Mediterranean diet has the potential to reduce the risk of AD or related neurodegenerative dementias.



## Brain Food

- A potent antioxidant, vitamin E may help protect neurons or nerve cells.
- People with Alzheimer's and mild cognitive impairment had lower blood levels of total tocopherols, total tocotrienols, and total vitamin E.

Journal of Internal Medicine: Classification and prediction of clinical diagnosis of Alzheimer's disease based on MRI and plasma measures of  $\alpha$ - $\gamma$ -tocotrienols and  $\gamma$ -tocopherol

## Brain Food

- Vitamin E prevents the oxidative damage induced by  $\beta$ -amyloid in cell culture and delays memory deficits in animal models.
- A placebo-controlled, clinical trial of vitamin E in patients with moderately advanced Alzheimer disease was conducted by the Alzheimer's Disease Cooperative Study.
- Subjects in the vitamin E group were treated with 2000 IU (1342  $\alpha$ -tocopherol equivalents) vitamin E/d. The results indicated that vitamin E may slow functional deterioration leading to nursing home placement.



## Brain Food

- Coconut Oil
- Medium Chained Fatty Acids
- Alternate brain fuel source



## Brain Berries

- Blueberries help protect the brain from oxidative stress and may reduce the effects of age-related conditions such as Alzheimer's disease or dementia.
- "Among women who consumed two or more servings of strawberries and blueberries each week we saw a modest reduction in memory decline."

Harvard researcher Elizabeth Devore of the Channing Laboratory.



## Brain Berries

- A high intake of flavonoid-rich berries, such as strawberries and blueberries, over time, can delay memory decline in older women by two and a half years.

Annals of Neurology, a journal of the American Neurological Association and Child Neurology Society.

- Specifically, researchers found that the berry consumption was linked with increased autophagy, which is the natural process the brain undergoes to clear out accumulation of toxic proteins.

Biology 2013 meeting

## Brain Berries

### "Call the blueberry the brain berry,"

-James Joseph, PhD, lead scientist in the Laboratory of Neuroscience at the USDA Human Nutrition Research Center on Aging at Tufts University.

- dopamine levels were much higher
- Dopamine is a neurotransmitter that enables smooth, controlled movements, efficient memory, attention, and problem-solving function.
- Dr. Joseph speculated that blueberry extract might also increase brain cell membrane fluidity while reducing levels of inflammatory compounds, thus slowing the brain's normal aging process.



## Brain Berries

- Researchers found that a large helping of the fruit boosts concentration and memory up to five hours later.
- In tests, volunteers who drank a blueberry smoothie in the morning did much better at mental tasks in the mid afternoon
- British scientists who made the discovery believe the antioxidants in blueberries stimulate the flow of blood and oxygen to the brain.

Dr Jeremy Spencer of Reading University

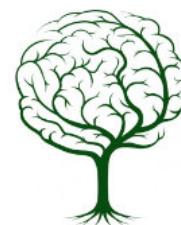
## Brain Berries

- Blueberries may also prove capable of helping humans whose brains have been damaged by a loss of blood flow and the critical oxygen and nutrients it provides.
- stabilization of collagen
- maintenance of elastin in connective tissue, blood vessels and muscle.
- Found to cross blood brain barrier
- Antioxidant = Antiinflammatory



## Herbal Support

- Ginkgo biloba
- Lemon Balm
- Club Moss
- Snowdrop
- Rosemary
- Centella
- Ashwaganda
- Turmeric



## Ginkgo biloba

- Ginkgo is the sole survivor of a primitive order of plants dating 200 million years old. One reason for its longevity is its ability to withstand insects, disease and pollution due to the unique mix of pharmacologically active compounds in its leaves.
- Some specimens claimed to be more than 2,500 years old: A 3,000 year-old ginkgo has been reported in Shandong province in China (Lewington and Parker, 183).



## Ginkgo biloba

- Elderly patients with chronic cerebral insufficiency demonstrated a significant regression of major symptoms including:
  - vertigo
  - tinnitus
  - headache
  - short-term memory
  - Vigilance
  - mood changes





## Ginkgo biloba

- Ginkgo has been shown to improve glucose and ATP utilization within the brain
- Capillary and venous blood flow to the head increases with ginkgo.
- Ginkgo improves the transmission of nerve impulses and increases alertness by increasing the brain's alpha wave rhythms and decreasing theta rhythms.

## Ginkgo biloba

- Ginkgo products are standardized to contain 24% of the bioflavonoids which occur in the leaf as well as ginkgolides and bilobilides, a complex group of compounds found only in the ginkgo tree

Supplement Facts	
Serving Size 1 Capsule	
Amount Per Serving	% Daily Value
Ginkgo Biloba leaf extract	60 mg *
(standardized for 24% (14.4 mg.) ginkgolavonglycosides and 6% (3.6 mg.) total terpenes lactones)	
*Daily Value not established	

Other Ingredients: Rice flour, gelatin, and water.

- An appropriate dose is 120 to 240 mg daily, taken in two to three doses.
- May take 6-12 weeks to note effects

## Lemon Balm

- 600mg Melissa ameliorated the negative mood effects of lab induced stress, with significantly increased self-ratings of calmness and reduced self-ratings of alertness
- In addition, a significant increase in the speed of mathematical processing, with no reduction in accuracy, was observed after ingestion of a 300-mg dose

30:70 methanol-water mixture, encapsulated.  
Psychosom Med. 2004 Jul-Aug;66(4):607-13



## Lemon Balm

A 1600mg dose of dried leaf:

- Improved cognitive performance (timed memory task performance and rapid visual information-processing task)
- Induced calmness
- Improved mood
- Lengthened attention span
- (Single dose! Effects within an hour!)

"These results suggest that doses of *Melissa officinalis* at or above the maximum employed here can improve cognitive performance and mood and may therefore be a valuable adjunct in the treatment of Alzheimer's disease."

\*Randomized, placebo-controlled, double-blind study *Neuropsychopharmacology*. 2003 Oct;28(10):1871-81

## Lemon Balm

- In a double-blind trial, supplementation with an extract of lemon balm for 16 weeks significantly improved cognitive function and significantly reduced agitation, compared with a placebo, in people with Alzheimer's disease.
- The amount of lemon balm used was 60 drops per day of a 1:1 tincture



-a double blind, randomized, placebo controlled trial. *J Neurol Neurosurg Psychiatry* 2003;74:863-6.

## Lemon Balm

- Whole leaf displays the greatest Cholinergic binding activity
- Acetylcholinesterase inhibition (in vitro, rosmarinic acid)
- Acetylcholine availability
- Enhanced Parasympathetic activity

- Less stress
- Rest & Digest
- Cognitive enhancement

2006 *Journal of Ethnopharmacology*: Researchers conclude that Lemon balm is one of several herbs that may be helpful in the prevention and treatment of Alzheimer's disease due to its ability to inhibit acetylcholinesterase activity and for its antioxidant properties.

## Lemon Balm

- A 4-week double-blind, placebo-controlled study also assessed the behavioral effects of Lemon Balm *aromatherapy* in a group of patients suffering from severe dementia.

### Results:

- Reduction in agitation
- Reduction in social withdrawal
- Increase in constructive activities

## Lemon Balm

- Lemon balm constituents are effective at reducing accumulation of amyloid-beta
- The antioxidant protection provided by lemon balm shows promise in reducing oxidant-related brain cell death

Behav Brain Res. 2007 Jun 18;180(2):139-45.27.

Am J Pathol. 2009 Dec;175(6):2557-65.28.

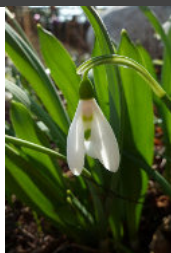


John Evelyn wrote: "Balm is sovereign for the brain, strengthening the memory and powerfully chasing away melancholy."

## Herbal Support

- Other cholinergic plants traditionally used for memory loss include:

- Salvia
- Artemisia
- Rosemary
- Ch Club Moss (*Huperzia serrata* (TCM = *Qian Ceng Ta/Jin BuHuan*): Alzheimer's patients taking huperzine A had significant improvement in their cognitive ability and ability to perform everyday tasks.
- Snowdrop (*Galanthus nivalis*) and G. woronowii: Contains galanthamine.



J Ethnopharmacol. 2000 Feb;69(2):105-14.

April 2009 issue of the "Journal of Neural Transmission"

## Gotu kola

- *Centella asiatica* helps restore decline cognitive function in traditional medicine.
- A Brahmi herb for its brain enhancing and anti-aging, longevity-producing properties.
- Doctrine of Signatures
- High in B vitamins
- Vascular vulnerary and Neovascularizer



J Ethnopharmacol. 2008 Mar 5;114(2):325-32. doi: 10.1016/j.jep.2007.11.038. Epub 2007 Dec 4.

Verse 5: B rami Rasayana:

Taking the expressed juice of B rami as instructed. "C ontinuous use for one week improves memory, intellect and "imparts a celestial glow to the complexion". Taking for a second week revives old forgotten memories and increases the ability to write books. C ontinuing to take the juice for a third week, allows one to repeat from memory up to one hundred words if heard or read in a single sitting. I n addition, this continued use for twenty-one days "removes all inauspicious features whether of the body or of the mind, the goddess of learning appears in an embodied form to the (mind of the) user, and all kinds of knowledge comes rushing into his memory. A single hearing is enough to make him reproduce (verbatim) from memory a discourse (however lengthy)", oh and by the way, he is enabled to live for five hundred years.

The twenty-eighth Chapter of the Cikitsa-Sthāna in the Suśruta Sāhita

## Gotu kola

- Supplementation with gotu kola in the elderly:
- Improved cognitive function and mood
- Alleviated generalized anxiety disorder... "Improved the willingness for adjustment and cognition."

J Ethnopharmacol. Mar 5 2008;116(2):325-332.


Nepal Med Coll J. 2010 Mar;12(1):8-11.





## Gotu kola


- Increases in the dendritic length and dendritic branching points in rats treated with Centella asiatica JUICE for 6 weeks.
- A water extract of gotu kola prevented the formation of intracellular beta-amyloid aggregates in a mouse model of Alzheimer's disease with high amounts of beta-amyloid
- Centella asiatica* accelerates nerve regeneration with larger calibre axons and greater myelination



Enhancement of Amygdaloid Neuronal Dendritic Arborization by Fresh Leaf Juice of Centella asiatica (Jinn) During Growth Spurt Period in Rats (Wichandoo-Rao et al. 2008)  
Alzheimer Dis 2012;2012:381974  
Enhancement of Hippocampal CA3 Neuronal Dendritic Arborization by Centella asiatica (Jinn) Fresh Leaf Extract Treatment in Adult Rats. Journal of the Chinese Medical Association Volume 71, Issue 1, January 2008, Pages 6-13

## Ashwaganda

- Ashwaganda is classified as a rasayan, a rejuvenating or life extending agent.
- Considered a "building tonic" (strength, muscle mass, vitality, memory, bone marrow, thyroid, adrenals, desire-ability)
- For 5000 years thought to "balance life forces" during stress and aging.
- Seen as a "Promoter of learning and memory retriever"




## Ashwaganda


- Studies suggest ashwaganda extract may reverse memory loss and improve cognitive abilities.
- Initially, mice with Alzheimer's were unable to learn or retain what they learned, but after receiving ashwaganda for 20 days, this improved significantly. After 30 days, the behavior of the mice returned to normal.
- A reduction in amyloid along with tangles of nerve fibers
- Greater acetylcholine receptor activity
- Rather than impacting the brain directly, researchers found that the herb worked by boosting a protein in the liver, which enters the bloodstream and helps clear amyloid from the brain.

## Turmeric- Curcumin Extract

- Decreased Beta-amyloid plaques
- Delayed degradation of neurons
- Metal-chelation
- Anti-inflammatory antioxidant
- Decreased microglia formation
- Overall memory improvement in patients
- Neovascularization



Ann Indian Acad Neurol. 2008 Jan-Mar; 11(1): 13-19. doi: 10.4103/0972-2327.40220.PMID: 18427811  
PMID: 18427811 The effect of curcumin (turmeric) on Alzheimer's disease: An overview



**Brain Balls:**

- Coconut oil
- Nut Butter
- Ashwaganda Powder
- Turmeric
- Black Pepper
- Ground Flax Seeds
- Gotu Kola Powder
- Lemon Balm and/or Rosemary Glycerite



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- Centro Ashé Costa Rica Grassroots Plant Healers Tour
- with Mimi Hernandez and Lupo Passero
- February 3-10, 2014 (7 nights).
- All for less than \$950
- Bask in sunny Caribbean paradise and learn traditional plant healing from local medicine men and women.
- [www.centroashe.org](http://www.centroashe.org)



## One World Healing Community

**The Community Herbalist Foundational Training Certificate**  
[www.oneworldhealer.com](http://www.oneworldhealer.com)  
 Live classes, February 11- April 1st, 2014, Tuesdays 6-8pm EST Price \$275.  
 Early Discount \$225 by January 15th, 2014  
 Individual Mentorship!

- Session 1: The Tasteless Herbalist- An understanding of taste and activity.
- Session 2: The Garden Herbalist- Let's explore medicinal plants that are easy to grow in our gardens!
- Session 3: The Kitchen Herbalist- Now we venture into the kitchen in search of medicinal ingredients.
- Session 4: The Forest Herbalist- Wild medicinal woodland plants and harvesting how to's
- Session 5: The Topical Herbalist- Mimi shares her top ten herbs for topical use!
- Session 6: The Medicine Making Herbalist- All you need to know to begin making herbal remedies.
- Session 7: The Weedy Herbalist- Dandelion, Violets, Plantain, Kudzu, Chickweed, Knotweed, and more
- Session 8: The Community Herbalist- Top 10 medicinal herbs in the market place. Do's and don'ts of herbology


## One World Healing Community

- "I could never be doing what I'm doing without teachers like you and learning to step out there. I will never forget what you said in one of the lectures about trusting your self as an herbalist and believing in your self. With your classes I feel more confident and I am not only a herbalist but for the most part I am a kitchen herb product." - Korrin Byrns
- "I am so completing this program because I love Mimi's 'stupid, grounded material, biochemical & ethnobotanical' background & incorporation of infinite possibility & wonder. I also love Mimi's innovative & intuitive way of understanding & using plant medicines." - Lisa May, Community Herbalist Certificate Earned
- "This webinar was the first one I took part in. I found the information informative & I do so to Ms. Hernandez for making some complex concepts easy to understand!" - Brenda, webinar student

**Mimi's Available Courses and Lectures:**

- The Community Herbalist Foundational Training Certificate (Feb 2014)
- The Family Herbalist Certificate (summer 2014)
- The Advanced Herbal Science Certificate (Fall 2014)
- Herbs for Vascular Support: AHG Lecture (Free!)
- Natural Support for Brain Health: AHG, December 9th (FREE!)
- Ethnobotany and its Relevance to Herbal Medicine (Sylvan Institute of Botanical Medicine)

## Thank You!



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