

AHG Professional Herbalist Training Webinars Presents:

“Scientific Validation of Botanical Medicine”

Ellen Kamhi, PhD, RN, RH (AHG), AHN-BC

Hosted by Michele Marlow

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Botanical Medicine

Scientific Validity

Ellen Kamhi PhD, RN, AHG, AHN-BC

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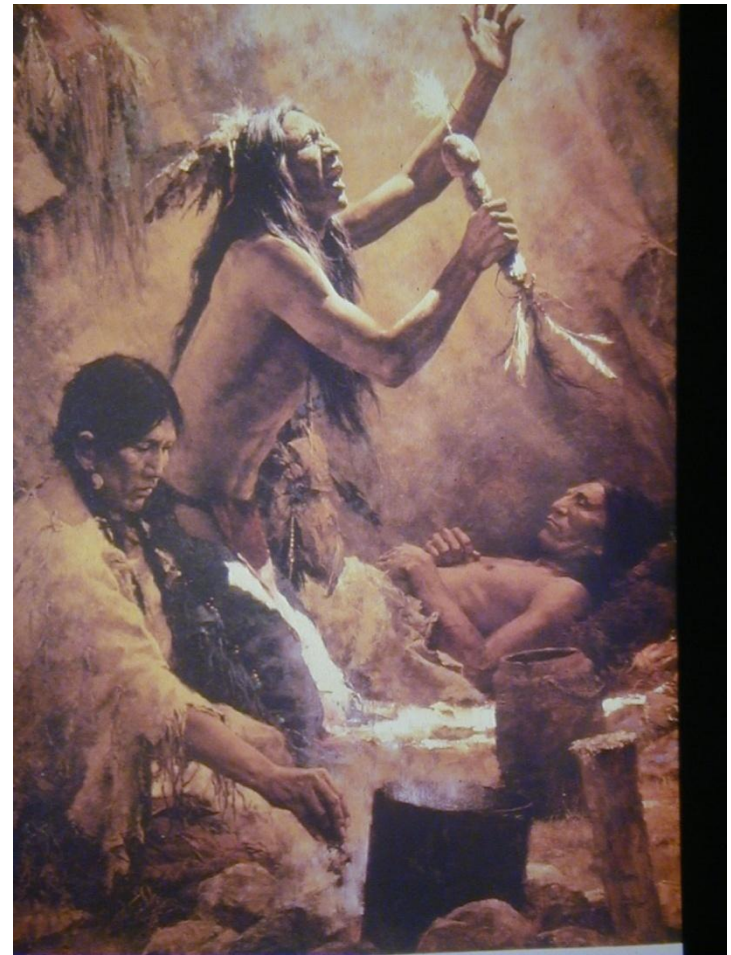
FACEBOOK The Natural Nurse



The Natural Nurse

Shamanic Healer

The shaman was the medicine man or woman, priest, lawyer, historian, mediator and judge, as well as the wise person of the tribe



Note: all interactions are supported by studies unless noted by potential/theoretical

Doctrine of Signatures

[Boehme Portrait 1730.jpeg](#) (48KB, tipo MIME: image/jpeg)

- At the age of 25, Böhme claimed to have a vision in which he saw the relationship between God and man.
- He published his revelations in the book, "Signatura Rerum; The Signature of all Things"
- REF:[Boehme Portrait 1730.jpeg](#) (48KB, tipo MIME: image/jpeg)



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Instinctual Dowsing

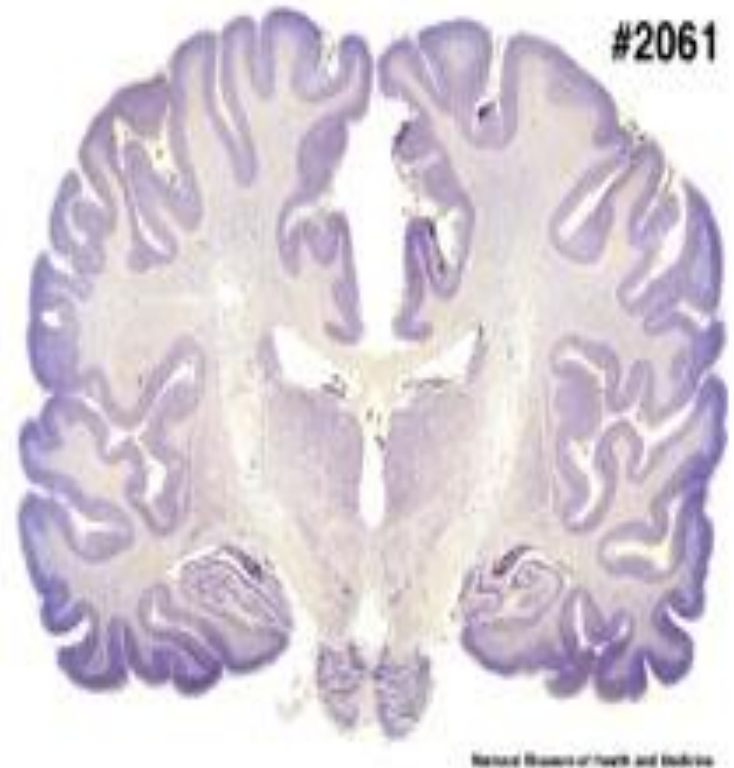
Chimps caught in the act



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Doctrine of Signatures

ie: Ginkgo & the Brain



Ginkgo

Maidenhair tree/ Ginkgo biloba

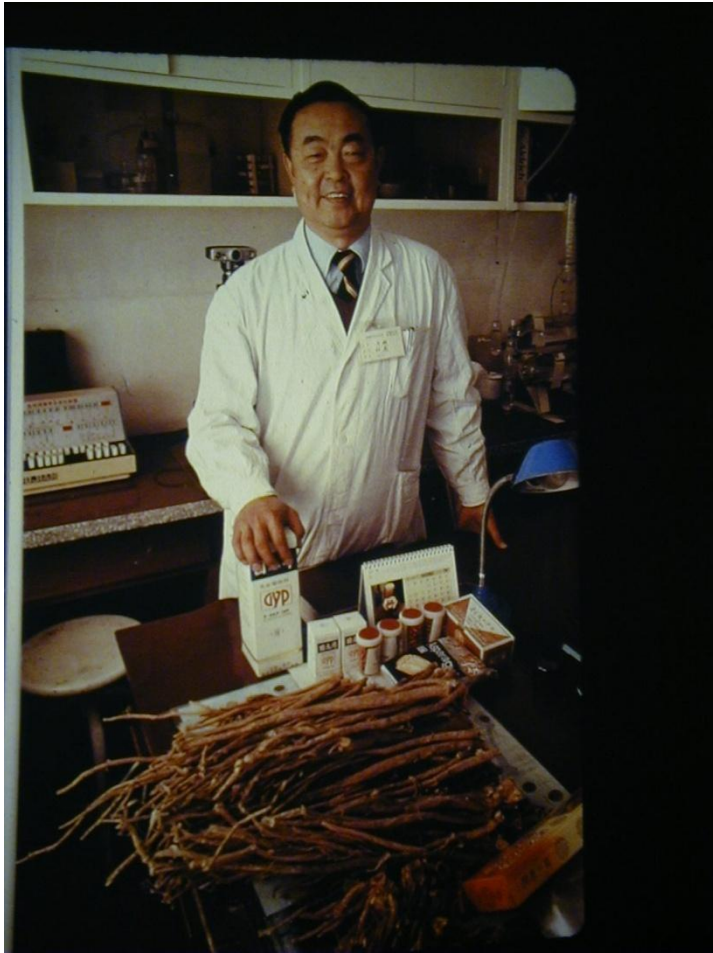
- ~ the world's oldest living tree
- ~ Age Related Cognitive Decline
- ~ Alzheimer's disease
- ~ Erectile Dysfunction
- ~ Macular Degeneration
- ~ Asthma

-improves circulation to peripheral vasculature





MODERN MD IN BEIJING



- This is an oncologist with *Radix Astragalus* and *Radix Angelica sinensis*

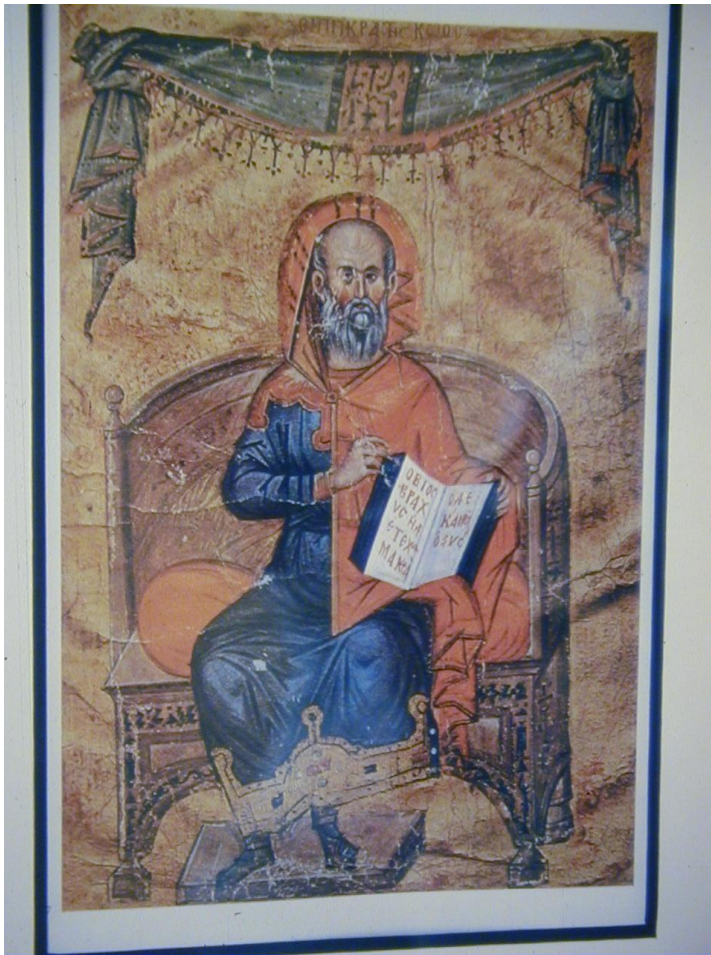
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The Egyptian Master Pharmacist by Robert Thom



Note: all interactions are supported by
studies unless noted by
potential/theoretical

Hippocrates of Kos (460-377BC)

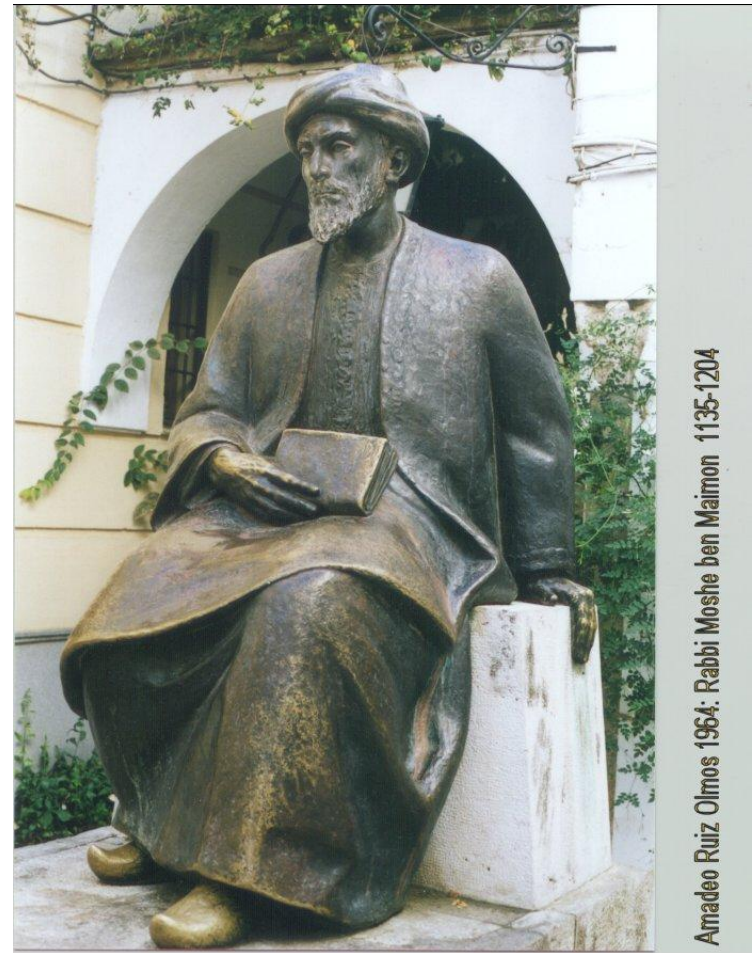


- The father of Western Medicine
- Accomplished Medical botanist
- Developed “The 4 humors”
- The Hippocratic school defined the field of medicine as separate from the other disciplines and made a profession of practicing medicine

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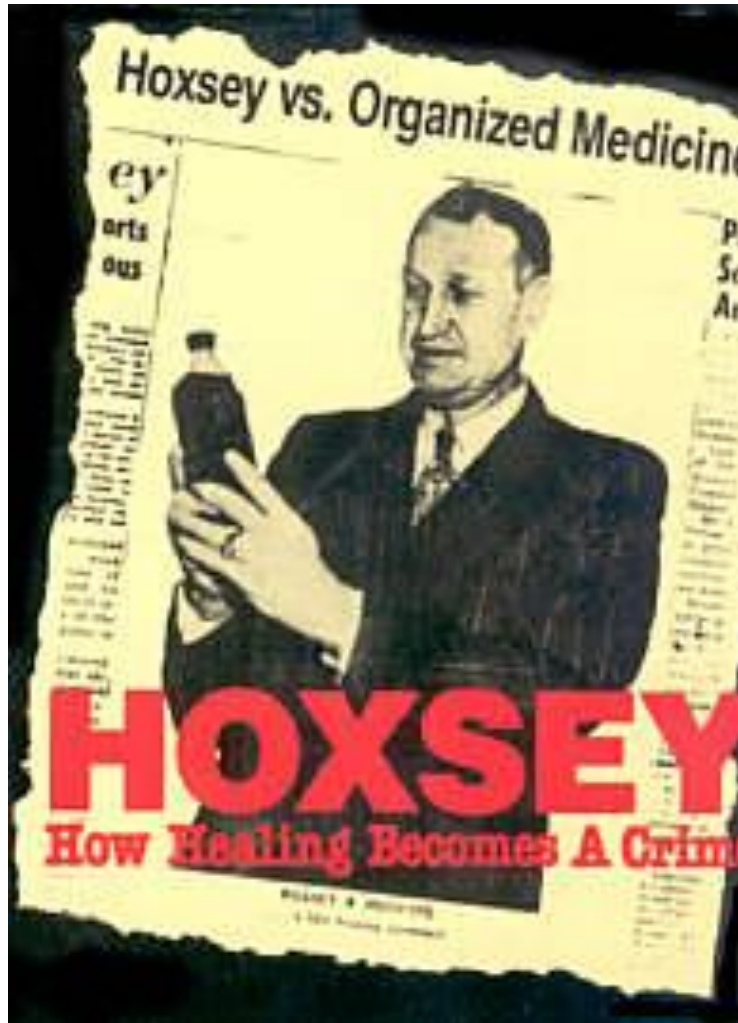
Dr./Rabbi Moses Maimonides

- Rabbi Moshe began to practice medicine, since he found it inappropriate to make money from his knowledge of the Jewish holy texts
- Rabbi Moshe was born in Cordova, Spain in 1135.
- He was highly successful and was appointed the personal physician of Grand Vizier Alfadal and Sultan Salh'al'din.



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Hoxey vs Organized Medicine



- The first Hoxsey Clinic opened in 1924 in IL
- The Battle with the AMA started after Dr. Malcolm Harris, Chief Surgeon of Alexis Bros Hospital in Chicago and secretary of the AMA, invited Hoxsey to treat a 66 y/o patient with a tumor
- In front of an audience of the AMA's most prominent Dr's. Including Morris Fishbein, Harry administered the formula, and in three weeks , the tumor fell off of Mr. Mannix (the patient)

Note: all interactions are supported by studies unless noted by potential/theoretical

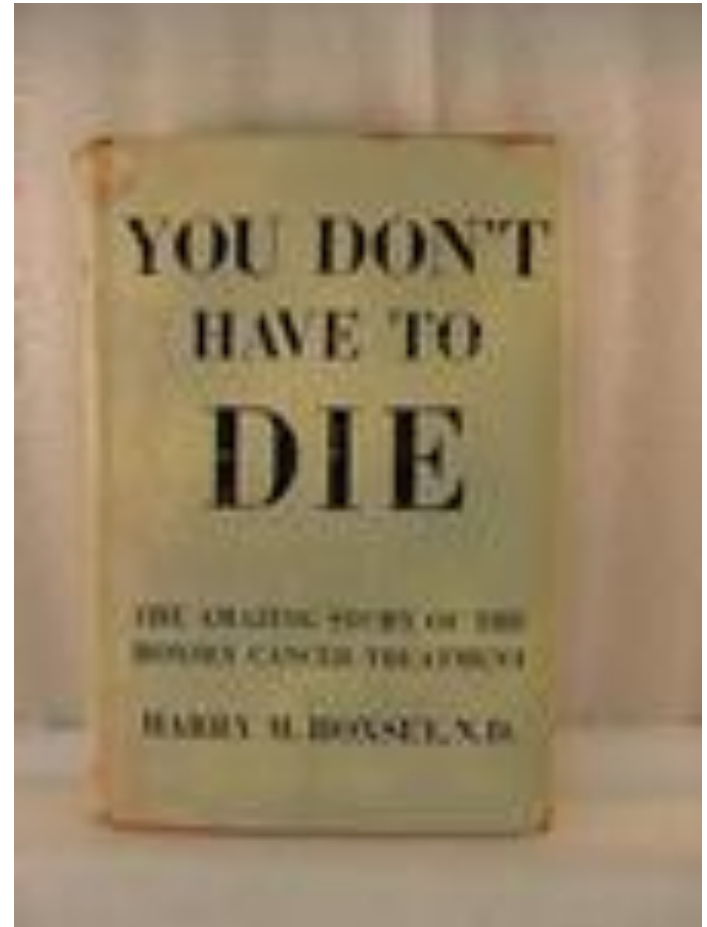
You Don't Have to Die

A book by Harry Hoxey

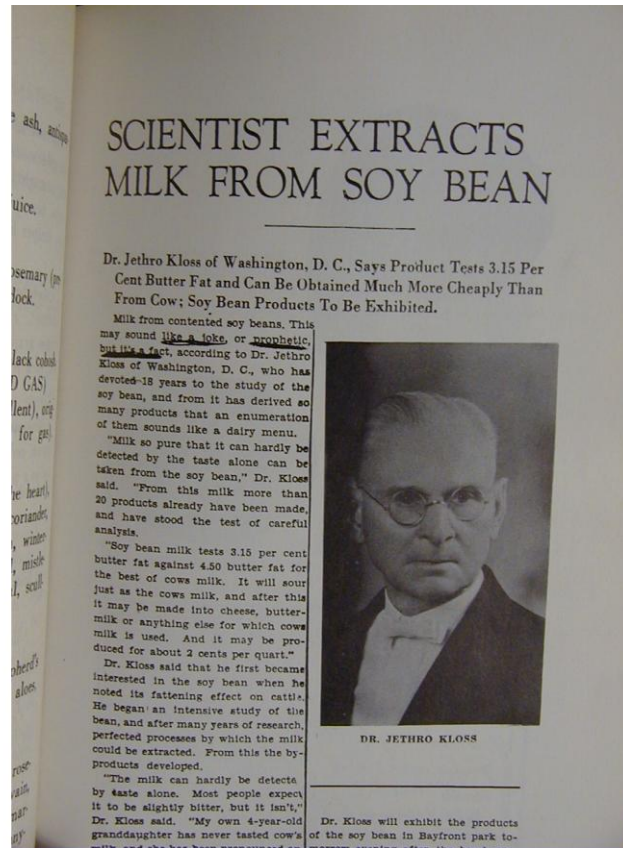
- The government was more interested in closing his clinic down than in evaluating a possible cancer cure.
- It finally succeeded in 1960. For 36 years before his clinic's closure, Hoxsey was harassed by medical boards, the AMA, and FDA.
- He was arrested 119 times between 1926-1931 for practicing medicine without a license and over 100 times between 1937-1939 after setting up a clinic in Texas.
- The doctors who worked with Hoxsey faced threats of having their own licenses revoked.
- Source: The Saga of Harry Hoxsey
When Healing Becomes a Crime

Ingredients in Hoxsey Remedy:

Red Clover Flower, Pau D'
Arco, Echinacea Root,
Buchu Leaf, Astragalus,
Chaparral Leaf, Blood Root



Jethro Kloss 1863-1946



- Born in Wisconsin
- Wrote 'Back to Eden' in 1939→His book was banned by the Tennessee medical establishment
- Famous for his book and perfecting the Japanese extraction of milk from soy and promoting it to the masses
- Formed the Benevolent Food Association
- Studied with Kellogg

REGULATION- DOES IT LEAD TO SAFETY????????

Incidence of Adverse Drug Reactions in Hospitalized Patients A Meta-analysis of Prospective Studies

Jason Lazarou, et. al. **JAMA**. 1998;279:1200-1205.

Conclusions.— The incidence of serious and fatal ADRs in US hospitals was found to be extremely high.

~ one hundred and six thousand deaths (106,000) from properly prescribed drugs during 1997 , plus hundreds of thousands more of dangerous adverse effects

Note: all interactions are supported by
studies unless noted by
potential/theoretical

Deaths from consumer use of herbs: 37/year

According to the FDA, between 1993 and 1998, federal, state and local agencies reported a total of 184 deaths, most of which were associated with weight-loss formulas.

184 Deaths/5 Years = 37 Deaths/Year

Reference:

Mortality From Herbs:

<http://www.emedicine.com/EMERG/topic449.htm>

Author: Jon Mark Hirshon, MD, MPH

Mortality/Morbidity: The FDA noted 2621 adverse herb-drug reactions and 184 deaths due to herbal products over a 5-year period (1993-1998).

Note: all interactions are supported by studies unless noted by potential/theoretical

Natural Herbs and Supplements have a MUCH BETTER SAFETY PROFILE than Pharmaceutical Drugs !

The American Association of Poison Control Centers released statistics in 2009 after an exhaustive 174 page study found that not even one death was caused by any dietary supplement in 2008. The data was published in the journal Clinical Toxicology

The use of antibiotics is associated with an increased risk of fatal breast cancer (JAMA, Feb 4, 2004).

Regular use of painkillers such as ibuprofen and acetaminophen increases the risk of chronic kidney failure. (New Engl Jour Med Dec 20, 2001)

1.9 million adverse drug events occurring each year, and up to 180,000 of these are life threatening or fatal (JAMA, Mar 5, 2003)

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studies unless noted by
potential/theoretical

DSHEA REGULATION

Dietary supplements, including herbal products, are regulated under the Dietary Supplement Health and Education Act (DSHEA) of 1994 as a food product. The Food and Drug Administration (FDA) may prohibit sales of herbal products containing pharmaceutical agents. The FDA also may prohibit sale of an herbal product proven to have serious or unreasonable risk under conditions of use on the label or as commonly consumed; prohibition of an herbal product generally occurs after marketing and extensive distribution to the public. The burden of proof lies with the FDA and consumer reporting.

Herbal products may contain:

- ~ ingredients not listed on the label
- ~ quantities of ingredients listed on the label can vary greatly
- ~ incorrect substitutions – ie- Aristolochia mistakenly substituted for Stephania in a weight loss product caused kidney damage

Note: all interactions are supported by
studies unless noted by
potential/theoretical

Mechanisms of Herb- Drug Interactions

Pharmacodynamic Interaction- herbal product causes additive, synergistic or antagonistic activity in relation to a conventional drug

Additive: coumadin- anticoagulant, ginkgo- anticoagulant- causes excessive bleeding

Synergistic: metformin- lowers blood sugar- gymnema- lowers blood sugar

Antagonistic: xanax- sedative hypnotic- guarana- stimulant- offsets relaxation response

Pharmacokinetic Interaction- herbal product changes the absorption, distribution, metabolism protein binding, or excretion- thus changing blood level of drug

Eg. Milk thistle up-regulates the action of P 450 liver enzymes, thus breaking drugs down more efficiently- thus lowers blood level of drug

Immune Support Herbs



OREGANO OIL

ACTIVE ANTIMICROBIAL



ECHINACEA

INCREASES PRODUCTION
& ACTIVITY OF
WHITE BLOOD CELLS



ELDER BERRY

INTERFERES WITH
VIRAL
REPLICATION

Oregano oil (*Oreganum vulgare*)



Uses of Oregano-

Antiseptic

Cuticle Treatment

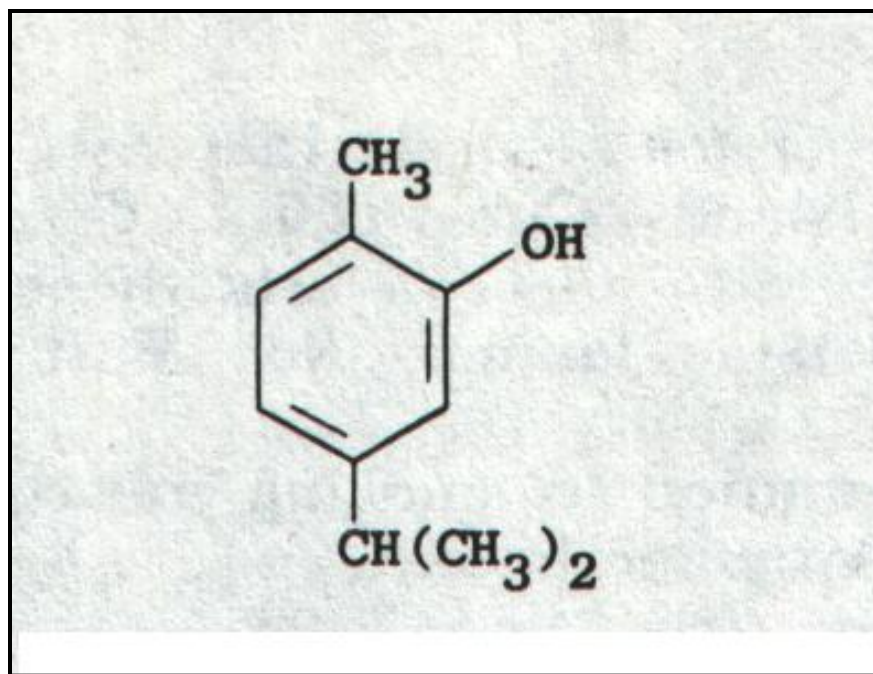
Gum Care

Canker and Cold Sores

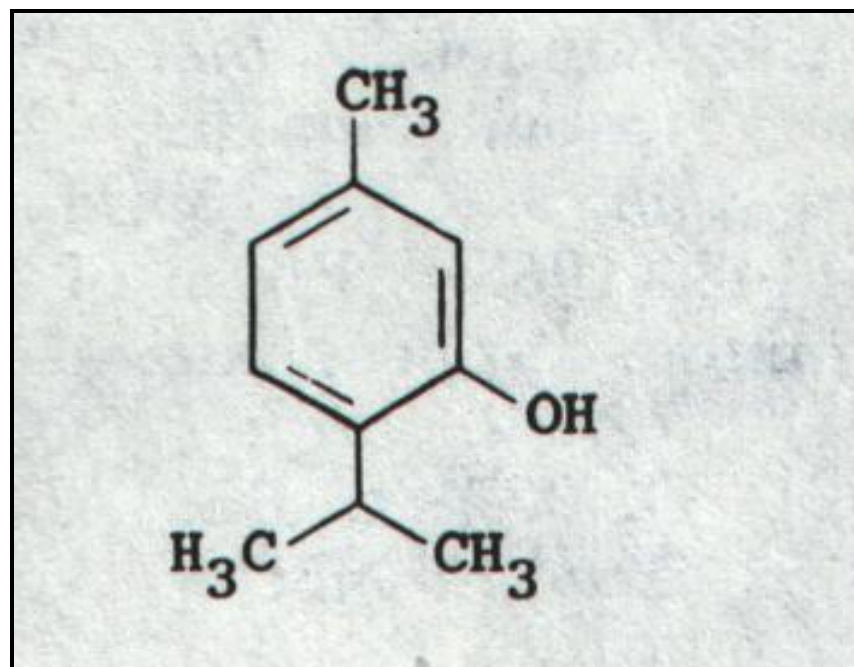


Oregano Constituents

Contains over 50 compounds which possess antimicrobial actions



Carvacrol



Thymol

Oregano Uses

Athlete's Foot

Candidiasis

Canker and cold sores

Eczema

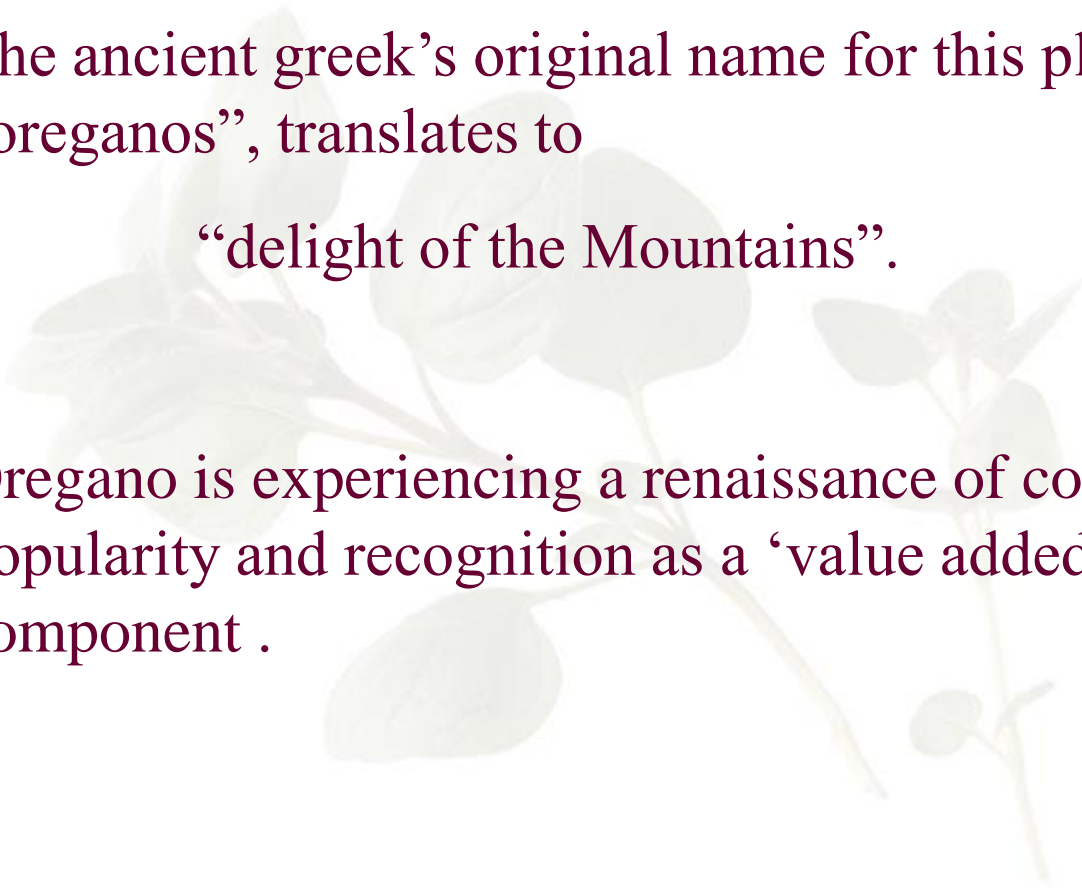
Psoriasis

Wounds

Oregano

The ancient greek's original name for this plant, “oreganos”, translates to “delight of the Mountains”.

Oregano is experiencing a renaissance of consumer popularity and recognition as a ‘value added’ component .



Oregano- Species Confusion

Many plants throughout the world are called oregano.

Marjoram (*Origanum majorana*)

Oregano in Spain (*Thymus nummulariu*)


Mexican oregano(*Lippia graveolens*)

It is important to be aware of this, because different species have different chemical constituents. The active ingredient, carvacrol, is found in high amounts only in true oregano, *Origanum vulgare*

Studies - Oregano

- Talpur, N.; Preuss, H. G.; Manohar, V., et.al. **Medicinal herbal oils: Antifungal effects of the edible oil of Oregano** . Journal of the American College of Nutrition, 19:5, October, 2000, 689
- You, Y. S.; Park, K. M.; Kim, Y. B. **Antimicrobial activity of some medical herbs and spices against Streptococcus mutans**. Korean Journal of Applied Microbiology and Bioengineering 21 (2), 1993, 187-191
- Stiles, J. C.; Sparks, W.; Ronzio, R. A. **The inhibition of Candida albicans by oregano**. Journal of Applied Nutrition, 47:4, 1995, 96-102
- Tassou, C. C.; Drosinos, E. H.; Nychas, G. J. E. **Inhibition of resident microbial flora and pathogen inocula on cold fresh fish fillets in olive oil , oregano , and lemon juice under modified atmosphere or air**. Journal of Food Protection , Jan 1996. v. 59 (1) p. 31-34.
- Karioti A., et. al., **Analysis of the essential oil of Origanum dubium growing wild in Cyprus. Investigation of its antioxidant capacity and antimicrobial activity**. Planta Medica 2006 Nov;72(14):1330-4

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Format: Abstract Send to 

J Appl Microbiol. 2017 Dec;123(6):1420-1428. doi: 10.1111/jam.13602. Epub 2017 Nov 2.

Carvacrol-rich oregano oil and thymol-rich thyme red oil inhibit biofilm formation and the virulence of uropathogenic *Escherichia coli*.

Lee JH¹, Kim YG¹, Lee J¹.

 Author information

Abstract

AIMS: Urinary tract infections are caused primarily by uropathogenic *Escherichia coli* (UPEC), and indwelling catheters are usually colonized by UPEC biofilms tolerant to common antibiotics. Hence, UPEC biofilms pose a substantial challenge, and there is an urgent need for effective control strategies.

METHODS AND RESULTS: In this study, 79 essential oils were screened for antibiofilm ability against UPEC. Components of active oils were identified, and their antibiofilm activities were also investigated using 96-well plates with crystal violet assay, scanning electron microscopy, and confocal laser scanning microscopy. Oregano oil and thyme red oil and their major common constituents, carvacrol and thymol, significantly inhibited UPEC biofilm formation at subinhibitory concentrations (<0.01%). These findings were supported by observations that carvacrol and thymol reduced fimbriae production and the swarming motility of UPEC. Furthermore, carvacrol and thymol markedly decreased the hemagglutinating ability of UPEC, and UPEC was more easily killed by human whole blood in the presence of carvacrol and thymol.

CONCLUSIONS: Carvacrol-rich oregano oil and thymol-rich thyme red oil have high antibiofilm and antivirulence activities against UPEC.

SIGNIFICANCE AND IMPACT OF STUDY: In the wake of rising antimicrobial resistance, we envisage that carvacrol and thymol could be used to prevent biofilm formation by UPEC and to reduce its virulence.

© 2017 The Society for Applied Microbiology.

KEYWORDS: biofilm; carvacrol; essential oils; oregano oil; thyme red oil; thymol; uropathogenic *Escherichia coli*

<https://www.ncbi.nlm.nih.gov/pubmed/28980415>

Be careful What You Blend Your Essential Oils With:

Remmal, A.; Bouchikhi, T.; Tantaoui-Elaraki, A.; Ettayebi, M. . **Inhibition of antibacterial activity of essential oils by Tween 80 and ethanol in liquid medium**

Journal de Pharmacie de Belgique (Belgium): 48 ,Sep-Oct,1993 ,352-356

..... concluded that ethyl alcohol and polysorbate 80(Tween 80) may decrease the antibacterial activity of essential oils.(clove oil and oregano oil tested)

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Oregano

- Iron: *In vitro* studies have reported that constituents contained in oregano can decrease the absorption of iron. This may alter the effects of these medications and possibly the dose needed for treatment. Use with caution in individuals with iron deficiency diseases.

Alkaloids: ISOQUINOLONE



California Poppy



Celendine



Blood Root



LG

Golden Seal



Oregon Grape

Alkaloids: ISOQUINOLONE

**Derived from the amino acids
Tyrosine and Phenylalanine**

Largest group of alkaloids: includes

- **Berberine**
- **Canadine**
- **Tetrahydropalmatine (THP)**
- **Morphine**
- **Sanquinine**

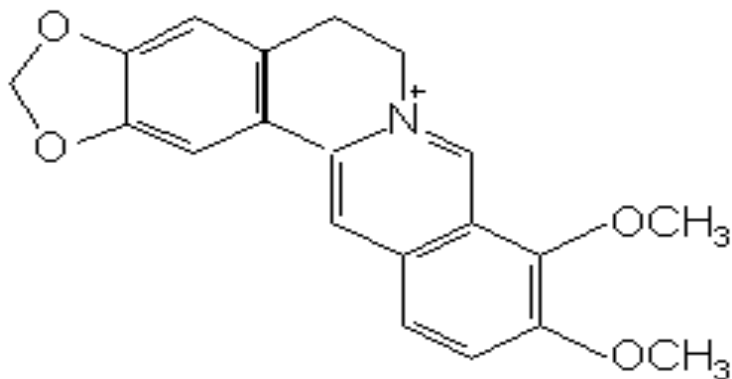
Alkaloids: ISOQUINOLONE

Medicinal Actions:

- Anti-microbial
- Chologogue/choleretic
- Enzyme inhibitor
- Antitumor
- Pain suppressant
- Cough suppressant
- Hypnotic
- Relaxant
- Antispasmodic

Alkaloids: ISOQUINOLONE

BERBERINE



- Yellow in color
- Soluble in ETOH
- Highest concentration in Root bark
- Amoebicidal
- Antibacterial (*Swap on tonsils for strep throat*)
- Anti fungal
- Antitumor
- Bitter
- Hepatic
- Mucus membrane support

Alkaloids: ISOQUINOLONE

BERBERINE

- Found in 23 genera
- Important sources:

Golden Seal
(*Hydrastis canadensis*)

Phellodendron
(*Phellodendron amurense*)

Oregon Grape Root
(*Mahonia Aquafolium*)

Bloodroot
(*Sanguinaria canadensis*)

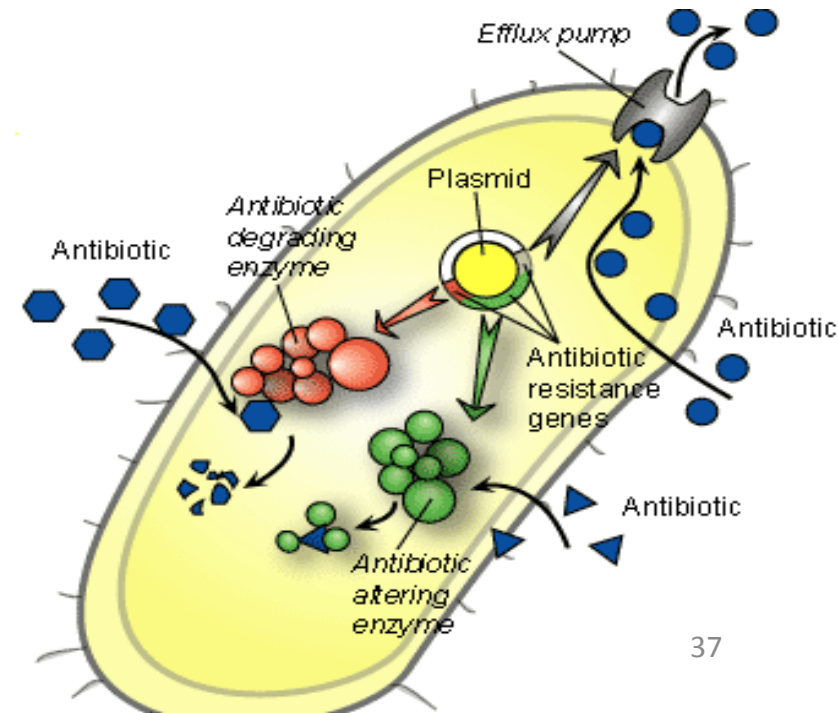
Barberry
(*Berberis spec*)

Chinese Goldenseal
(*Coptis chinensis*)

Antibiotics: Use or misuse?

Overuse of antibiotics causes development of resistant strains of bacteria via several mechanisms:

- Chemically modifying the antibiotic
- Rendering the antibiotic inactive through physical removal from the cell
- Modifying the target site so that it is not recognized by the antibiotic
- Inactivating the antibiotic via enzymatic action (**most common strategy**)



Alkaloids: ISOQUINOLONE

BERBERINE

MDR Pump: Multi Drug Resistant Pump
Biological mechanism used by a
cell to rid itself of chemicals

PGP: P-glycoprotein efflux pump

**Study on mechanism of action of
5'-MHC-D & pheophorbide-A**

<http://www.ncbi.nlm.nih.gov/pubmed/12842327>

Berberis aetnensis C. Presl. extracts: antimicrobial properties and interaction with ciprofloxacin.

[Musumeci R¹](#), [Speciale A](#), [Costanzo R](#), [Annino A](#), [Ragusa S](#), [Rapisarda A](#), [Pappalardo MS](#), [Iauk L](#).

Author information

Abstract

Previous research showed that berberine-containing *Berberis* species synthesise the substances 5'-methoxyhydrnocarpin-D (5'-MHC-D) and pheophorbide a, which have no antimicrobial activity but inhibit the expression of multidrug resistant efflux pumps (MDRs) in *Staphylococcus aureus* and potentiate the action of berberine. The MDR pumps extrude synthetic and natural antimicrobials from bacterial cells. We searched for these compounds in *Berberis aetnensis* C. Presl. (*Berberidaceae*), an endemic plant of the volcano Mount Etna. This work confirms the presence of pheophorbide a and permits us to hypothesise the presence of 5'-MHC-D in leaf extracts. In fact, the activity of ciprofloxacin was improved when two chromatographic fractions isolated from leaf extracts were added. These results are indicative of the presence of MDR pump inhibitors. Moreover, crude extracts were tested on several micro-organisms and showed antimicrobial activity mainly against Gram-positive bacteria and yeasts.

PMID: 12842327

[PubMed - indexed for MEDLINE]

Role of Berberine in the Treatment of Methicillin-Resistant *Staphylococcus aureus* Infections.

Chu M^{1,2}, Zhang MB³, Liu YC³, Kang JR⁴, Chu ZY³, Yin KL^{1,2}, Ding LY^{1,2}, Ding R³, Xiao RX¹, Yin YN¹, Liu XY¹, Wang YD^{1,2}.

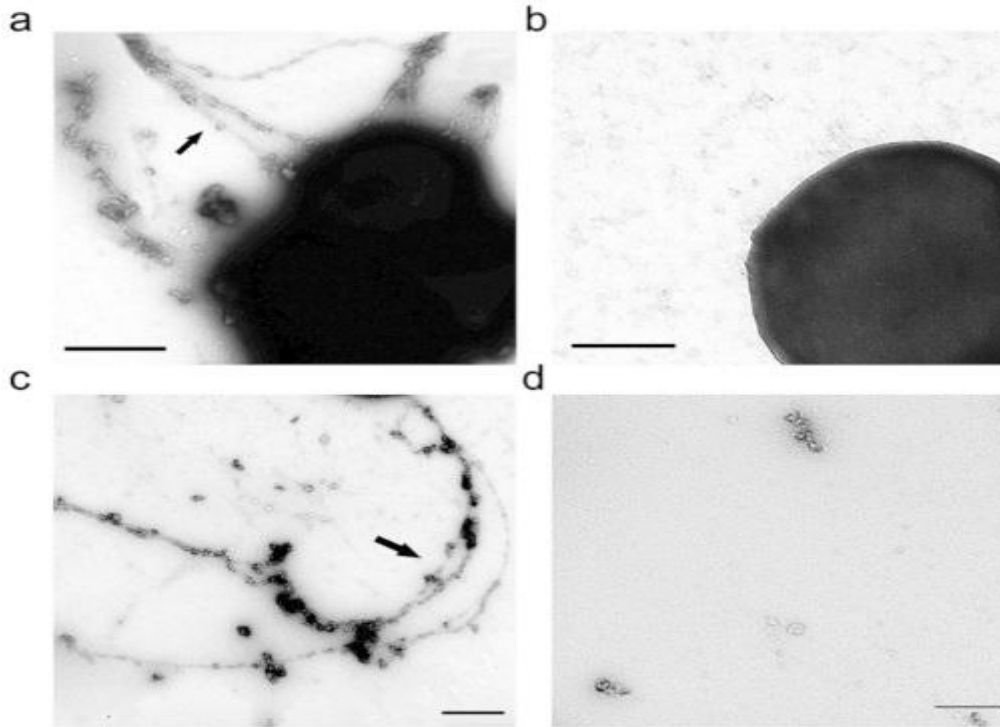
Author information

Abstract

Berberine is an isoquinoline alkaloid widely used in the treatment of microbial infections. Recent studies have shown that berberine can enhance the inhibitory efficacy of antibiotics against clinical multi-drug resistant isolates of methicillin-resistant *Staphylococcus aureus* (MRSA). However, the underlying mechanisms are poorly understood. Here, we demonstrated that sub-minimum inhibitory concentrations (MICs) of berberine exhibited no bactericidal activity against MRSA, but affected MRSA biofilm development in a dose dependent manner within the concentration ranging from 1 to 64 µg/mL. Further study indicated that berberine inhibited MRSA amyloid fibrils formation, which consist of phenol-soluble modulins (PSMs). Molecular dynamics simulation revealed that berberine could bind with the phenyl ring of Phe19 in PSMα2 through hydrophobic interaction. Collectively, berberine can inhibit MRSA biofilm formation via affecting PSMs' aggregation into amyloid fibrils, and thereby enhance bactericidal activity of antibiotics. These findings will provide new insights into the multiple pharmacological properties of berberine in the treatment of microbial-generated amyloid involved diseases.

PMID: 27103062 PMCID: [PMC4840435](#) DOI: [10.1038/srep24748](#)

[PubMed - in process] **Free PMC Article**



Inhibitory effect of berberine on MRSA amyloid fibril. micrographs of cells from MRSA biofilms in the culture with berberine

- (a) Control
- (b) (b) 32 $\mu\text{g/mL}$.
- (c) (c) 24 hours after mixing 100 $\mu\text{g/mL}$ each of the seven PSM peptides (α 1-4, β 1-2, and δ -toxin), fibril structures were readily observed by TEM.
- (d) (d) Few amyloid fibril was observed when PSM peptides were cultured with 32 $\mu\text{g/mL}$ berberine. Bars indicate 500 nm.

Alkaloids: ISOQUINOLONE

BERBERINE

Exophysiological Synergy



- Antibacterial: *Staphylococcus aureus*
- MDR pump (PGP) ejects the berberine
- 5'-MHC-D & pheophorbide-A inhibit PGP
- Berberine stays inside bacteria, kills it

Alkaloids: ISOQUINOLONE

Early Study on Synergy

Synergy in a medicinal plant: Antimicrobial action of berberine potentiated by 5'-methoxyhydrnocarpin, a multidrug pump inhibitor

Frank R. Stermitz*, Peter Lorenz*, Jeanne N. Tawara*, Lauren A. Zenewicz†, and Kim Lewis†*

*Department of Chemistry, Colorado State University, Fort Collins, CO 80523; and †Biotechnology Center, Tufts University, Medford, MA 02155

Communicated by Arnold L. Demain, Massachusetts Institute of Technology, Cambridge, MA, December 13, 1999 (received for review October 6, 1999)

Multidrug resistance pumps (MDRs) protect microbial cells from both synthetic and natural antimicrobials. Amphipathic cations are preferred substrates of MDRs. Berberine alkaloids, which are cationic antimicrobials produced by a variety of plants, are readily extruded by MDRs. Several *Berberis* medicinal plants producing berberine were found also to synthesize an inhibitor of the NorA MDR pump of a human pathogen *Staphylococcus aureus*. The inhibitor was identified as 5'-methoxyhydrnocarpin (5'-MHC), previously reported as a minor component of chaulmoogra oil, a traditional therapy for leprosy. 5'-MHC is an amphipathic weak acid and is distinctly different from the cationic substrates of NorA. 5'-MHC had no antimicrobial activity alone but strongly potentiated the action of berberine and other NorA substrates against *S. aureus*. MDR-dependent efflux of ethidium bromide and berberine from *S. aureus* cells was completely inhibited by 5'-MHC. The level of accumulation of berberine in the cells was increased strongly in the presence of 5'-MHC, indicating that this plant compound effectively disabled the bacterial resistance mechanism against the berberine antimicrobial.

bation at 37°C. Growth was assayed with a microtiter plate reader (Bio-Rad) by absorption at 600 nm.

Measurement of Active Transport. Cells were cultured with aeration at 37°C to an OD₆₀₀ of 1.8, pelleted, and washed twice with 20 mM Hepes/NaOH (pH 7.0) buffer. Cells then were resuspended in 1 ml of Hepes buffer at an OD₆₀₀ of 0.3 containing 10 μM CCCP and 10 μg/ml ethidium bromide followed by incubation at 37°C for 30 min (6). The cells were centrifuged, washed, and resuspended at an OD₆₀₀ of 0.15 in Hepes buffer, and fluorescence was measured with a Perkin-Elmer LS-5B luminescence spectrometer at 530-nm excitation and 600-nm emission wavelengths. Measurement of berberine efflux was performed by following a similar procedure with excitation at 355 nm and emission at 517 nm. The concentration of berberine for cell loading was 30 μg/ml.

Isolation of MDR Inhibitors and Structure Determination. Dried, ground leaves (188 g) of *B. fremontii* were submerged in 1,200 ml

Alkaloids: ISOQUINOLONE

GOLDENSEAL

(Hydrastis canadensis)

- Endangered species
- Root most medicinal
- Watch for leaf capsules at lower prices



Hydrastis canadensis L.
Image processed by Thomas Schoepke
www.plant-pictures.de

Alkaloids: ISOQUINOLONE

GOLDENSEAL



Uses:

- * Soothes Mucous Membranes
- * Supports Digestive Processes
- * Discourages Microorganisms
- * Enhances Immune

Function:

- * Famous for use against sore throat and Strep throat
- * Effective against bladder infections
- * Effective against protozoa, bacteria, fungi, including *Candida albicans*
- * Eye wash
- * Gum rub

Alkaloids: ISOQUINOLONE

GOLDENSEAL

How To Use: Dosage:

- Powdered goldenseal root and rhizome, 4–6 grams per day in tablet or capsule form
- Liquid herbal extracts, 2–4 ml three times per day
- Standardized extracts (8–12% alkaloids) 250–500 mg three times per day

Cautions:

- Continuous use should not exceed three weeks, with a break of at least two weeks between each use.
- gastrointestinal distress
- not recommended for pregnant or breast-feeding women (oxytotic)
- May interfere with tetracycline antibiotics(conflicting studies)
- Goldenseal on endangered species list- replace with Oregon Grape/Barberry

Alkaloids: ISOQUINOLONE

OREGON GRAPE (*Mahonia aquafolium*)



Alkaloids: ISOQUINOLONE

BARBERRY



http://en.wikipedia.org/wiki/Image:Berberis_thunb_frt.jpg, CC BY-SA 3.0,
<https://commons.wikimedia.org/w/index.php?curid=1806133>

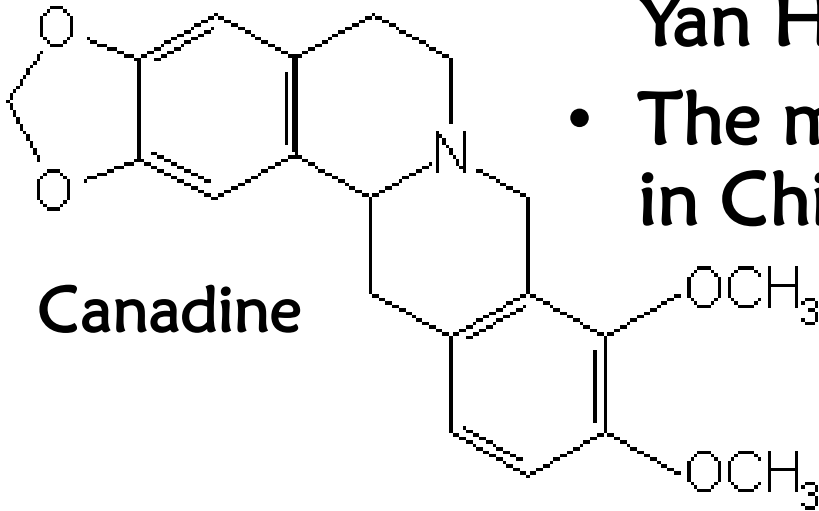
Alkaloids: ISOQUINOLONE

CORYDALIS Species
yán hú suo



Alkaloids: ISOQUINOLONE

CORYDALIS Yan Hu Suo

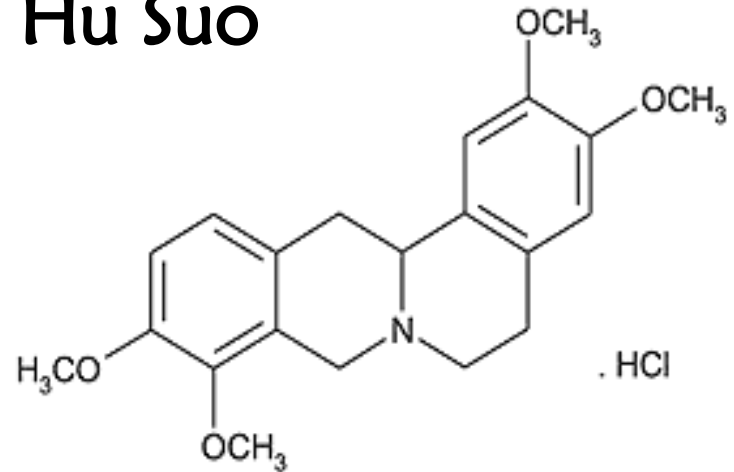


- Canadine is found in Corydalis Yan Huo Su
- The most powerful pain killer in Chinese medicine
- Has hypotensive properties

Alkaloids: ISOQUINOLONE

CORYDALIS Yan Hu Suo

- THP found in Corydalis
- 40% as strong as morphine; vinegar extract strongest
- THP is nonaddictive
- Potentiates acupuncture analgesia
- Used in all types of pain in China; one of Nature's most potent pain relievers



Tetrahydropalmatine
(THP)

Alkaloids: ISOQUINOLONE

CORYDALIS Yan Hu Suo

Scientific Studies Support Use :

Insomnia

Pain

Arrhythmia

Dysmenorrhea

Stomach Ulcers

Anti-angiogenesis

Screening active compounds from *Corydalis yanhusuo* by combining high expression VEGF receptor HEK293 cell membrane chromatography with HPLC - ESI - IT - TOF - MSn method.

Wei F¹, Hu Q¹, Huang J¹, Han S², Wang S¹.

Author information

¹School of Pharmacy, Xi'an Jiaotong University, 76# Yanta West Road, Xi'an, 710061, China; National-Provincial Joint Engineering Research Center for Natural Vascular Medicine Screening & Analysis, Xi'an 710061, China.

²School of Pharmacy, Xi'an Jiaotong University, 76# Yanta West Road, Xi'an, 710061, China; National-Provincial Joint Engineering Research Center for Natural Vascular Medicine Screening & Analysis, Xi'an 710061, China. Electronic address: slhan2008@mail.xjtu.edu.cn.

Abstract

Corydalis Thizoma, or Yuanhu in China, is a common herbal drug used for thousands of years as analgesic in Chinese medicine that has been reported to have potential anti-angiogenic effects. In this study, a VEGFR/cell membrane chromatography (VEGFR/CMC) coupled with HPLC- ESI-IT-TOF-MSn system was developed and successfully applied for identifying active components from YuanHu extract acting on VEGFR. We identified tetrahydropalmatine and corydaline as bioactive components with VEGFR activity, thus confirming their inhibitory activity on VEGFR engineered HEK293 cell growth by MTT assay. The activity of tetrahydropalmatine and corydaline was compared with the positive control sorafenib in a range of concentration from 6.25 to 50.0μM, showing a dose-dependent inhibitory trend. These results indicate that the VEGFR/CMC coupled with HPLC- ESI-IT-TOF-MSn system can purify and identify specific bioactive components from complex systems, thus representing a promising tool for screening molecules active towards VEGFR from natural herbs.

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Alkaloids: ISOQUINOLONE

CORYDALIS Yan Hu Suo

How To Use: Dosage: analgesic or sedative effect

- crude, dried rhizome: 5–10 grams per day/divided doses
- 1:2 fluid extract 10–20 ml per day

Cautions:

- not recommended for pregnant or breast-feeding women
- Reports of THP toxicity/ acute hepatitis
- Possibility of vertigo, fatigue, nausea

JAMBA



- Jamba of the Maroons
- Honoring our Teachers

Dr. Diane Robertson, Jamaica's premier natural pharmacist ,
author & herbalist



The Consciousness and Intent of Plants



Ellen Kamhi PhD RN

www.naturalnurse.com

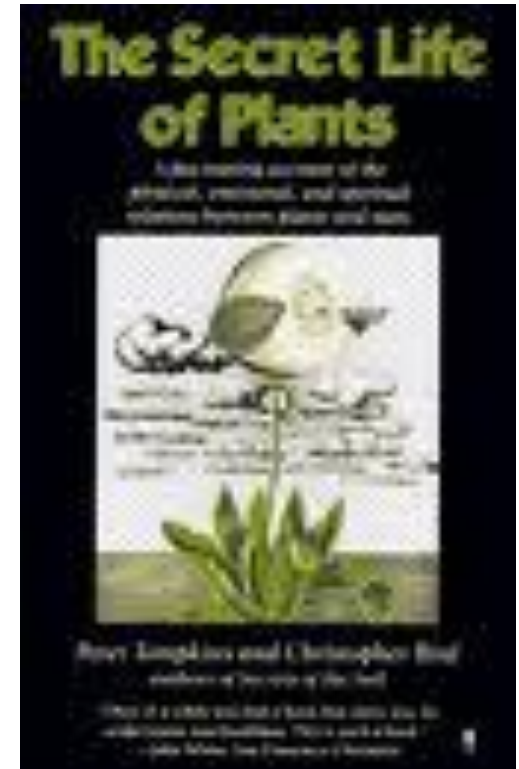
The Secret Life Of Plants

The Secret Life of Plants (1973) Peter Tompkins and Christopher Bird

"A fascinating account of the physical, emotional, and spiritual relations between plants and man."

Plant sentience has been observed through changes in plants' conductivity measured through a polygraph, pioneered by Cleve Backster.

The book delves deeply into such unconventional topics: aura, psychophysics, orgone, radionics, kirlian photography, magnetism/magnetotropism, bio-electrics, dowsing, and (more conventionally) the history of science.



The Secret Life of Plants was the basis for the 1979 documentary with a soundtrack specially recorded by Stevie Wonder called *Journey through the Secret Life of Plants*.

The Secret Life Of Plants

"Cleve Backster's work is essential reading for all who would delve more deeply into the nature of reality."
—Joan Houston, Ph.D.

—Joan Houston, Ph.D.

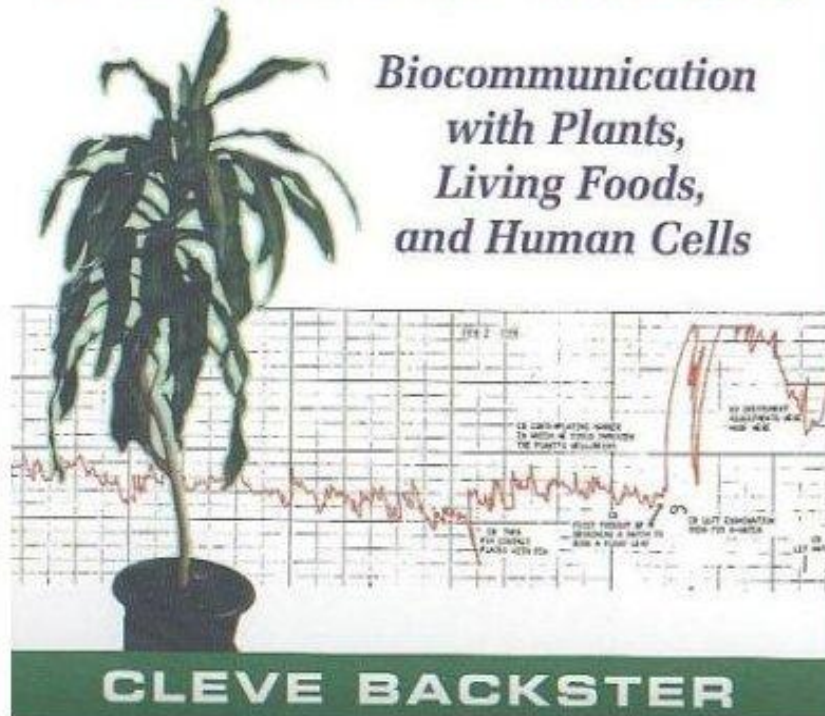
author of *Jump Time* and *A Passion for the Possible*

"Clove Backster's research has profound implications for humanity and its future evolution."
—Deepak Chopra, author of *How to Know God*

—Deepak Chopra, author of *How to Know God*

PRIMARY PERCEPTION

***Biocommunication
with Plants,
Living Foods,
and Human Cells***



The Secret Life Of Plants

Cleve Backster is the originator of the polygraph machine

He performed many experiments on the consciousness of plants

<http://www.youtube.com/watch?v=mGRluepFwdg>

14 July 2010

The Secret Life Of Plants

Plants can think and remember



<http://www.bbc.co.uk/news/10598926>

Science & Environment

Plants 'can think and remember'

By Victoria Gill
Science reporter, BBC News

🕒 14 July 2010 | [Science & Environment](#)



Plants are able to "remember" and "react" to information contained in light, according to researchers.

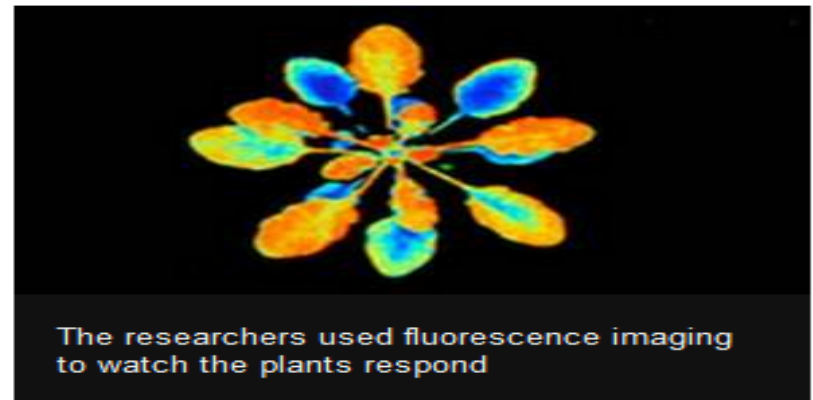
Plants, scientists say, transmit information about light intensity and quality from leaf to leaf in a very similar way to our own nervous systems.

These "electro-chemical signals" are carried by cells that act as "nerves" of the plants.

In their experiment, the scientists showed that light shone on to one leaf caused the whole plant to respond.

And the response, which took the form of light-induced chemical reactions in the leaves, continued in the dark.

This showed, they said, that the plant "remembered" the information encoded in light.



"We shone the light only on the bottom of the plant and we observed changes in the upper part," explained Professor Stanislaw Karpinski from the Warsaw University of Life Sciences in Poland, who led this research.

He presented the findings at the Society for Experimental Biology's annual meeting in Prague, Czech Republic.

"And the changes proceeded when the light was off... This was a complete surprise."

In previous work, Professor Karpinski found that chemical signals could be passed throughout whole plants - allowing them to respond to and survive changes and stresses in their environment.

Thinking plants

What was even more peculiar, Professor Karpinski said, was that the plants' responses changed depending on the colour of the light that was being shone on them.

"There were characteristic [changes] for red, blue and white light," he explained.

He suspected that the plants might use the information encoded in the light to stimulate protective chemical reactions. He and his colleagues examined this more closely by looking at the effect of different colours of light on the plants' immunity to disease.

"When we shone the light for on the plant for one hour and then infected it [with a virus or with bacteria] 24 hours after that light exposure, it resisted the infection," he explained.

"But when we infected the plant before shining the light, it could not build up resistance.

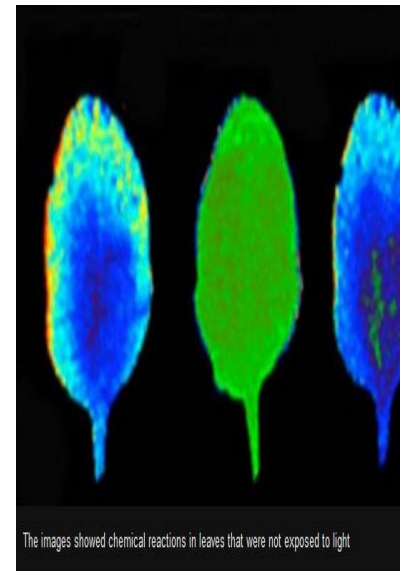
"[So the plant] has a specific memory for the light which builds its immunity against pathogens, and it can adjust to varying light conditions."

He said that plants used information encrypted in the light to immunise themselves against seasonal pathogens.

“

Plants perform a sort of biological light computation, using information contained in the light to immunise themselves against diseases

Stanislaw Karpinski, Warsaw
University of Life Sciences



The images showed chemical reactions in leaves that were not exposed to light

The Secret Life Of Plants

**From a Desert Plant, a Scented Cry for Help
New York Times, Aug 31, 2010**

Most animals let out a cry when they are wounded. But plants let out a smell. This acts as an actual distress call. When the plant is attacked, the call triggers the arrival of bugs that eat the offending insect pest.

<http://www.sciencemag.org/cgi/content/abstract/329/5995/1075>

The Secret Life Of Plants

Plant communication: Sagebrush engage in self-recognition and warn of danger

<http://www.physorg.com/news164652485.html>

Plant communication: Sagebrush engage in self-recognition and warn of danger

Jun 19, 2009



Sagebrush exhibits communication only when air contact is allowed, says Richard "Rick" Karban, shown here bagging sagebrush. When air contact is blocked with plastic bags there is no indication that communication has occurred. Credit: Richard Karban

Plants engage in self-recognition and can communicate danger to their "clones" or genetically identical cuttings planted nearby, says professor Richard Karban of the Department of Entomology, University of California, Davis, in groundbreaking research published in the current edition of *Ecology Letters*.

Karban and fellow scientist Kaori Shiojiri of the Center for Ecological Research, Kyoto University, Japan, found that sagebrush responded to cues of self and non-self without physical contact.

The sagebrush communicated and cooperated with other branches of themselves to avoid being eaten by grasshoppers, Karban said. Although the research is in its early stages, the scientists suspect that the plants warn their own kind of impending danger by emitting volatile cues. This may involve

Interspecies Communication and Periodontal Disease

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3874309/>

Is autoinducer-2 a universal signal for interspecies communication: a comparative genomic and phylogenetic analysis of the synthesis and signal transduction pathways

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC524169/>

BMC Evol Biol. 2004; 4: 36.

PMCID: PMC524169

Published online 2004 Sep 29. doi: [10.1186/1471-2148-4-36](https://doi.org/10.1186/1471-2148-4-36)

Is autoinducer-2 a universal signal for interspecies communication: a comparative genomic and phylogenetic analysis of the synthesis and signal transduction pathways

Jibin Sun,¹ Rolf Daniel,² Irene Wagner-Döbler,³ and An-Ping Zeng¹

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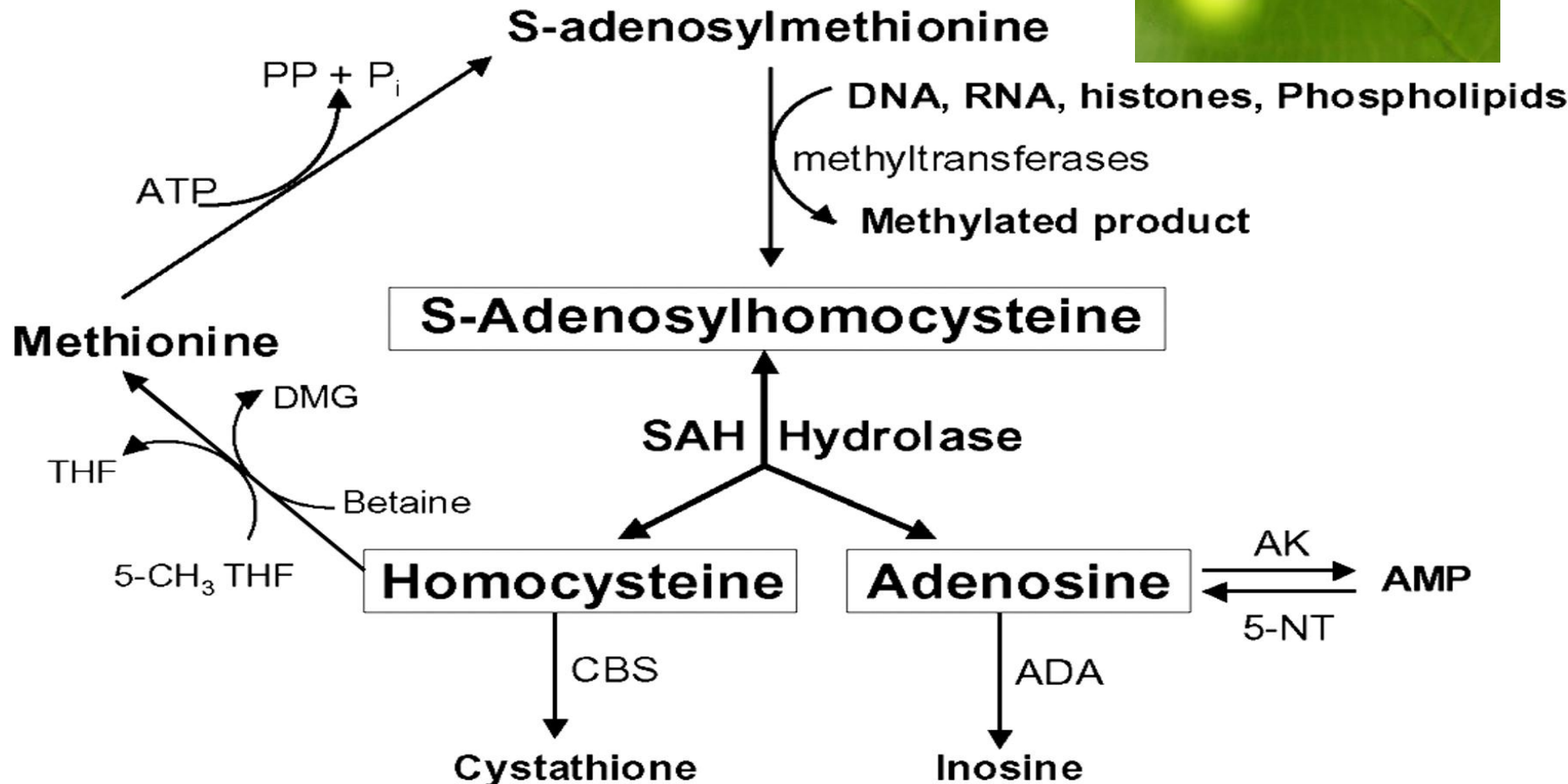
Abstract

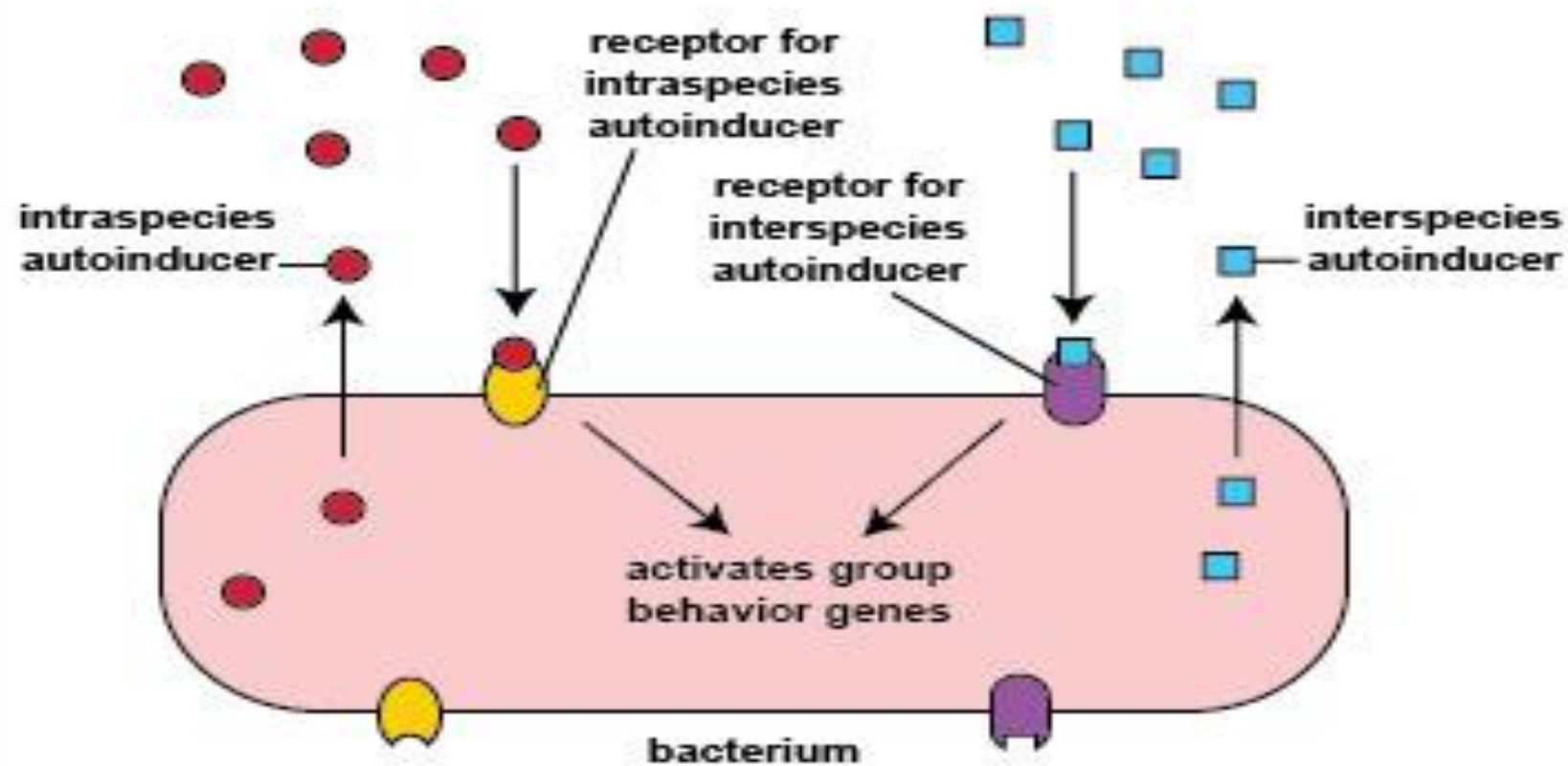
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Background

Quorum sensing is a process of bacterial cell-to-cell communication involving the production and detection of extracellular signaling molecules called autoinducers. Recently, it has been proposed that autoinducer-2 (AI-2), a furanosyl borate diester derived from the recycling of S-adenosyl-homocysteine (SAH) to homocysteine, serves as a universal signal for interspecies communication.

Autoinducer-2 (AI-2), a furanosyl borate diester derived from the recycling of S-adenosyl-homocysteine (SAH) to homocysteine, serves as a universal signal for interspecies communication.





Psychotronics in Modern Science

Bridging the Bio-Electronic Interface with Biofabrication

The Interface Between Biology and Electronics

<http://www.jove.com/video/4231/bridging-the-bio-electronic-interface-with-biofabrication>

Plants Communicate Using An Internet of Fungi

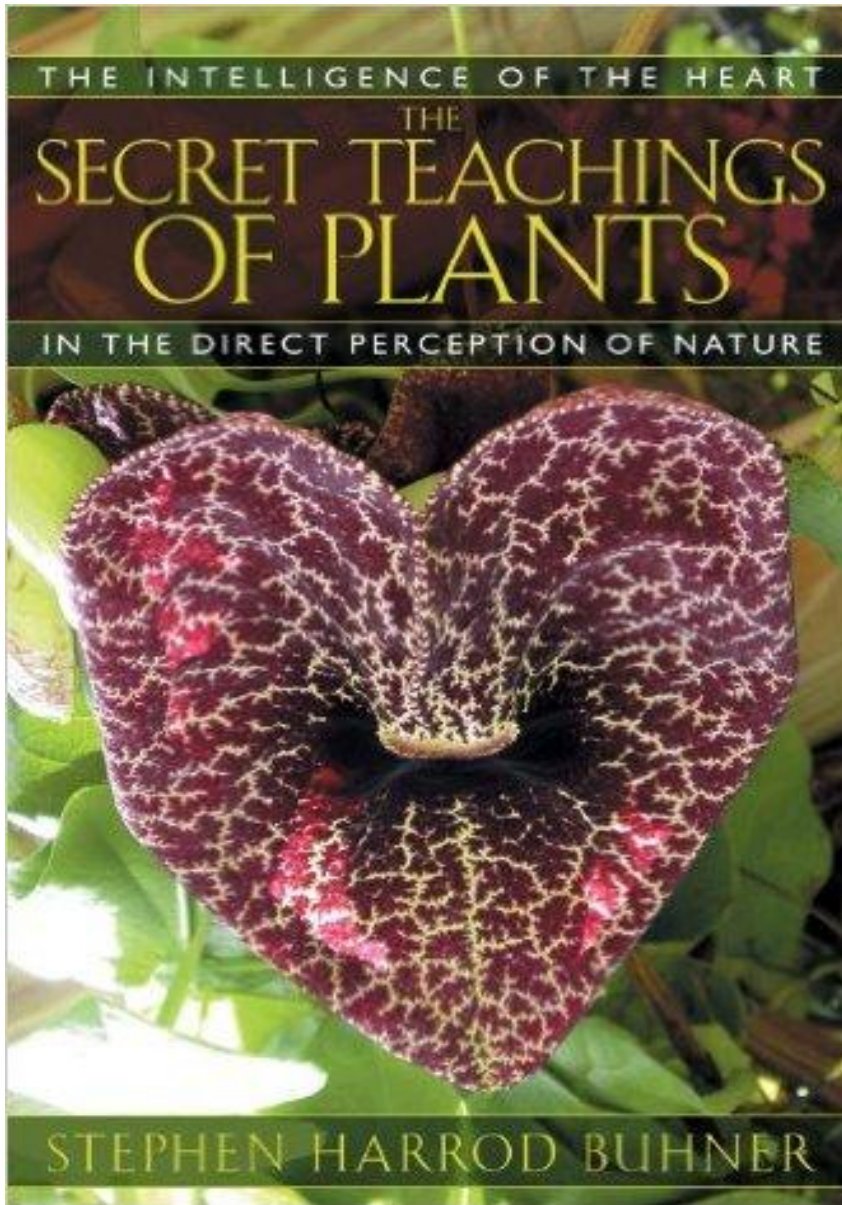
By UPLIFT on Friday June 19th, 2015



<http://upliftconnect.com/plants-communicate-using-an-internet-of-fungi/>

How Plants Communicate

- “These fungal networks make communication between plants, including those of different species, faster, and more effective. We don’t think about it because we can usually only see what is above ground. But most of the plants you can see are connected below ground, not directly through their roots but via their mycelial connections.”



Stephen Harrod Buhner reveals
that all life forms on Earth possess
intelligence, language, a sense of I
and not I, and the capacity to
dream.

He shows that by consciously
opening the doors of perception,
we can reconnect with the living
intelligences in Nature as kindred
Beings.

German Forest Ranger Finds That Trees Have Social Networks, Too

The Saturday Profile

By SALLY McGRANE JAN. 29, 2016



PETER WOHLLEBEN

THE HIDDEN LIFE OF TREES



What They Feel,
How They Communicate
Discoveries from a Secret World

Trees in the forest are social beings.

They can count, learn and remember;

Protect and feed their children,

nurse sick neighbors; warn each other

of danger by sending electrical signals

across a fungal network known as the

“Wood Wide Web”; and, for reasons

unknown, keep the ancient stumps of

long-felled companions alive for

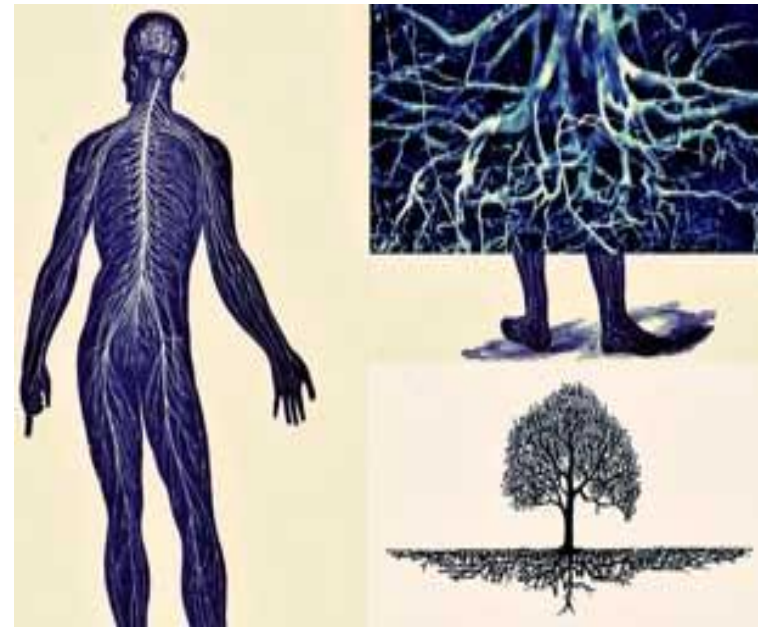
centuries by feeding them a sugar

solution through their roots.



Dr. Kamhi at University of West Indies Natural Products Division





Ellen Kamhi, PhD, RN, AHG, AHN-BC

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