BLUE VERVAIN (Verbena officinalis) An Overview of the Research and Clinical Indications



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plant intelligence.

This herb research review is intended to be used by authorized health care practitioners, clinicians, pharmacists, physicians, and any other professionally trained persons who may provide medical advice to patients or consumers. The information presented has been obtained from research of reference books, clinical and scientific published papers, and other published works. The lay reader is advised to consult a licensed health care practitioner regarding the information contained herein.

BACKGROUND AND USES

Blue vervain is also known as Verbena officinalis, American Blue Vervain and Simpler's Joy. It is in the Verbenacea plant family. Blue vervain is indigenous to the United States, flowers during the summer months, and is typically found in tall grassy fields and along roadsides. The King's American Dispensatory historically listed this perennial plant for use as tonic, emetic, expectorant, and sudorific. A sudorific is a substance that causes or increases sweating. Eclectic Physician Dr. John Scudder included blue vervain in the classic text: The American Eclectic Materia Medica and Therapeutics, 1898. He listed its traditional use for colds, coughs and other issues affecting the respiratory organs as well as its use for "obstructions of the glandular system". It has also been used over the course of time to ease tension and support a healthy mood. Blue vervain is a tall (3-4 feet), slender, elegant, perennial plant with opposing leaves, which are lobed and serrated in shape and have small purplish-blue flowers.

ACTIVE CONSTITUENTS

A significant number of active constituents of blue vervain have been identified, including: adenosine, aucubin, beta-carotene, caffeic-acid, citral, hastatoside, lupeol, ursolic-acid, verbenalin, verbenin.

RESEARCH SUMMARY

As determined via research studies, blue vervain has shown benefit in improving symptoms that affect the nervous system, mood, promotion of estrogen and progesterone receptor binding, inducing cellular apoptosis in chronic lymphocytic leukemia, anti-inflammation and topical analgesia.

Neuroprotective effects

A research study demonstrated the neuroprotective effects of blue vervain aqueous extracts.¹ Given the wide array of health problems this botanical medicine has been used to treat, including mood, inflammation and hormonal imbalances, the researchers hypothesized that blue vervain can exert cytoprotective effects on the cells of the central nervous system.

As extracellular accumulation of Abeta peptide is an important cytotoxic factor involved in Alzheimer's disease (AD), they further explored its neuroprotective effect against Abeta. Treatment of V. officinalis attenuated Abeta-triggered DEVD- and VDVADcleavage activities in a dose-dependent manner. Further studies elucidated that phosphorylation of both interferon-inducing protein kinase (PKR) and c-Jun N-terminal kinase (JNK) was attenuated in Abeta-treated neurons. Pre-treatment of aqueous

extracts of V. officinalis significantly attenuated the toxicity of beta-amyloid (Abeta) peptide and reducing agent dithiothreitol in primary cultures of cortical neurons.

Taken together, the researchers proved their hypothesis by showing the novel neuroprotective effects of blue vervain. As blue vervain has long been used for many years as a traditional herbal medicine, this study may provide a lead for its potential to be a neuroprotective agent against neuronal loss in Alzheimer's Dementia. The findings in this study merit further research using blue vervain extracts in human subjects.

Sleep promotion

A research study demonstrated that the constituents hastatoside and verbenalin are major sleep-promoting components of blue vervain.² The basis for the study was the observation that herbal tea made from blue vervain has traditionally been used for insomnia and other nervous conditions. Using a rat model, the research team set out to study the constituents hastatoside, verbenalin, and verbascoside, which are the major iridoids (hastatoside and verbenalin) and polyphenol (verbascoside) components responsible for the pharmacological activity of V. officinalis. The study showed an increase in the total time of non-rapid eye movement (NREM) sleep during a 9-h period by 81% and 42%, respectively, with a lag time of about 3 - 5 hours after administration at the same time (lights-off time). It is useful to note that the beneficial effect was obtained by administering the constituents 3 - 5 hours before the time the lights were turned off, comparable to bedtime. The constituent verbascoside had no effect on the amount of sleep in this study, as measured by EEG response.

Promotion of cellular apoptosis in Chronic Lymphocytic Leukemia (CLL)

A research study demonstrated that an essential oil of blue vervain, and a constituent of blue vervain, citral, were an effective agent in inducing cellular apoptosis in lymphocytes collected from normal blood donors and patients with chronic lymphocytic leukemia (CLL).³ The number of apoptotic cells was greater in CLL patients than in healthy subjects at all different times of incubation (4, 8 and 24 hours) for samples treated with Verbena officinalis essential oil (A) and citral (B) as well vs. controls at different concentrations (0.1% and 0.01%).

Patients carrying deletion 17p13 (p53 mutation) showed a reduced ability to undergo apoptosis with respect to patients with other genomic aberrations or normal karyotype. The proapoptotic activity of Verbena officinalis essential oil and a constituent citral is thought to be due to a direct procaspase 3 activation. These data further support evidence that indicate this warrants further study in both cell lines and human trials in the quest to develop new therapeutic agents that are effective in apoptosis in cancer cells, including chronic lymphocytic leukemia (CLL).

Anti-inflammation and topical analgesia

In the treatment of topical inflammation, blue vervain has traditionally been used as part of botanical medicine. A research study used the traditional usage of blue vervain as a way to determine the effectiveness of several formulations containing the herb.⁴ Due to the anti-inflammatory activity of blue vervain 50% methanolic extract in i.p. and topical administration, the effects of several formulations were prepared and studied on rats using carrageenan-induced edema and formalin testing. Piroxicam gel and methyl salicylate ointment were studied as positive control for anti-inflammatory and analgesic activity, respectively. The edema inhibition of the preparations containing the extract at the doses of 1-3% w/w was significantly different from the control group. The anti-inflammatory effect of VO-3% was similar to the effect of piroxicam gel 3 h after carrageenan injection. The analgesic activity of topical preparation with more than 2.5% w/w was observed in the early phase. This activity was observed in concentrations of more than 2% w/w in the late phase. The topical analgesic activity of the extract was less than the analgesic activity of methyl salicylate ointment.

Progesterone (PR) and estradiol (ER) receptor binding promotion

This study reported on the content and bioactivity of plant (phyto) estrogens and progestins in various foods, herbs, botanical agents, and spices, before and after human consumption.⁵ Over 150 herbs traditionally used by herbalists for treating a variety of health problems were extracted and tested for their relative capacity to compete with estradiol and progesterone binding to intracellular receptors for progesterone (PR) and estradiol (ER) in intact human breast cancer cells. The six highest ER-binding herbs that are commonly consumed were soy, licorice, red clover, thyme, tumeric, hops, and verbena. The six highest PR-binding herbs and spices commonly consumed were oregano, verbena, turmeric, thyme, red clover and damiana. Some of the herbs and spices found to contain high phytoestrogens and phytoprogestins were further tested for bioactivity based on their ability to regulate cell growth rate in ER (+) and ER (-) breast cancer cell lines and to induce or inhibit the synthesis of alkaline phosphatase, an end product of progesterone action, in PR (+) cells. In general, the study found that ERbinding herbal extracts were agonists, much like estradiol, whereas PR-binding extracts, were neutral or antagonists. The bioavailability of phytoestrogens and phytoprogestins in vivo were studied by quantitating the ER-binding and PR-binding capacity of saliva following consumption of soy milk, exogenous progesterone, medroxyprogesterone acetate, or wild mexican yam products containing diosgenin. Soy milk caused a dramatic increase in saliva ER-binding components without a concomitant rise in estradiol. Consumption of PR-binding herbs increased the progestin activity of saliva, but there were marked differences in bioactivity. The study demonstrated that many of the commonly consumed foods, herbs, and spices contain phytoestrogens and phytoprogestins that act as agonists and antagonists in vivo.

CLINICAL INDICATIONS, CONTRAINDICATIONS AND TOXICITY

Clinical Indications

- Nervous system support
- Mood improvement
- Anti-inflammatory
- Topical analgesia
- Promotion of estrogen and progesterone receptor binding

Contraindications

Patients with known allergy/hypersensitivity to the Verbena (Verbenaceae) family or any blue vervain constituents, or to members of the Verbenaceae family, should avoid using this botanical agent. Due to varying levels of Vitamin K and/or beta carotene content, patients using anti-coagulant or anti-platelet therapies should avoid using blue vervain until more research with human subjects has been conducted and the need for caution further clarified.⁶ It should be used with caution with sedative medication but is not an absolute contraindication.

Toxicity

Blue vervain appears to be safe if there are no concomitant conditions that warrant caution.

See notes on Contraindications above.

CONCLUSIONS

The overall botanical medicine benefit profile for blue vervain makes it a viable botanical agent for supporting a healthier nervous system, mood, promotion of estrogen and progesterone receptor binding, inducing cellular apoptosis in chronic lymphocytic leukemia (CLL), anti-inflammation and topical analgesia.

It appears to be a safe herb for medicinal use when used with regard for pertinent contraindications.

ABOUT THE AUTHOR

Dr. Beverly Yates, Naturopathic Physician, graduated from the National College of Naturopathic Medicine in 1994. She is also a graduate of the Massachusetts Institute of Technology with a B. S. degree in Electrical Engineering. Dr. Yates served as the lead supervising doctor for the first ever fully accredited Naturopathic and Integrative medical residency in the state of California. Dr. Yates is a Featured Speaker at Natural, Holistic and Integrative Medicine conferences on Integrative Cardiology, presenting continuing medical education on Women and Cardiovascular Disorders, Weight Loss, and other topics.

Dr. Yates serves as a National Media Representative for the American Association of Naturopathic Physicians, appearing as an expert in natural medicine on TV shows in select metropolitan areas. She is a member of several industry advisory boards, including the Scientific Advisory Board of *Gaia Herbs Professional Solutions*. Recently, in response to Dr. Yates' contributions to community health, she provided testimony for the Tri-Caucus of the California legislature concerning the growing impact of obesity and diabetes in communities of color around the state and the country.

Sought after for her ability to provide concise, clear explanations about medical processes and natural medicine, Dr. Yates has appeared on numerous TV broadcast networks including ABC, CBS, CNN, CW, Fox, NBC, and PBS; her radio interviews include NPR, CNN Radio, and Sirius International Satellite; and her print interviews include Essence Magazine, Good Housekeeping Magazine, Rodale Press, and Women's World. She presents continuing medical education (CME) to physicians and other health professionals all over the country, and delivers keynote addresses to the general public.

Dr. Yates is a nationally recognized author [book: Heart Health for Black Women: A Natural Approach to Healing and Preventing Heart Disease, Marlowe & Co., 2000] and a contributing author [medical textbook: Maternal Newborn and Child Nursing: Family Centered Care, Prentice Hall, 2003].

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