Research On Ashitaba

Note: Research was done on Chalcone from Ashitaba plant and NOT on the Ashitaba Tea itself. Ashitaba Tea is produced from Ashitaba plant.

Ashitaba, A Medicinal Plant and Health Method

By Kazuo Hida, Medicinal Plant Specialist

ASHITABA (Tomorrow's leaf) has its origins on the Island of Hachijo where the warm tropical currents pass by on their way North to meet the cold Arctic waters of the Pacific. How did Ashitaba come by its name of tomorrow's leaf or weed. It was named for its ability to reproduce its green stem and leaf almost on a daily basis.

Asitaba's scientific name, Angelica keiskei Koidzumi, comes from the Latin name for Angel, and because of its godly effects that have given it its notoriety. The population of Hachijo Island are known for their longevity, living until the ripe old age of 90's. When all aspects of their life style were analyzed the determination was that the consumption of ashitaba was a heavy contribution to the extended lifetime. As more study was conducted on the composition of this special strain of angelica, ashitaba has been attracting more and more attention from the scientific community.

Medicinal Value of this plant

The oldest written record of the medicinal value of Ashitaba appears in a Chinese book listing the medicines that can be derived from grass. The book was first published during the Ming Dynasty and was written by Dr. Lee during his lifetime from 1518 to 1593 AD. This book was then transcribed into Latin, English, German, Russian and became internationally famous as a publication on Oriental Medicine. It was brought into Japan and presented to the Shogun by Razan Hayashi in 1606.

Green plants such as Ashitaba are the basis of our energy conversion life cycle. These green plants contain chlorophyll whth uses tho energy from the sun to convert carbon dioxide into oxygen and create a by-product, starch. Chlorophyll has shown an ability to be an anti-bacterial, aid in the production of blood, and an ability to help heal wounds.

Ashitaba, which contains high levels of chlorophyll, is actually a weed, and is used to existing under sever conditions such as high winds, rain, high salinity, and generally bad weather. However, it is

actually these same conditions that train the ashitaba plant and build its constitution so that it can produce the unique by-products that can help keep the body and its functions in balance.

Ashitaba contains a yellow sap which contains chalcones that are unique to this strain of angelica. It is these chalcones that are considered as the active ingredients that give rise to ashitaba's use as a diuretic, laxative, and aid to good metabolism.

Ashitaba also contains B 12, which is normally produced in animals and not plants. It is this uniqueness that places ashitaba in the same category as marine products such as marine algae instead of other land based green plants. Vitamin B12 has been recognized for its ability to promote the production of blood cells, increase attention span and concentration, increase the production of growth hormone, and promote the immune system so that it can fight off serious disorder; such as cancer.

Research on the Effects of Ashitaba, Angelica Keiskei Koidzumi

By Dr. Kevin Lance Jones, L.Ac., O.M.D.

Little is known about the world of Herbal Medicine. Of all the plant species in the world, only five percent (5%) have been cataloged. Of that five percent that have been cataloged, a full one quarter (1/4) or tweet - five percent (25%) have medicinal qualities. There is the example of Taxol, an anti-uterine cancer drug that is derived from the bark of the Yu tree.

Another shinning example of a newly discovered herbal medicine is ASHITABA. Its name literally translates to "Early Growth" in Japanese. It was named so because of its ability to grow very fast and exhibit a strong Qi or energetic life force.

What is Ashitaba?

Ashitaba is indigenous to a small area called the Seven Islands of Izu. It is a herbaceous plant that grows year round. This greenish yellow vegetable has been mentioned in many ancient Japanese Medical Writings. It has been consumed as a vegetable and medicine for many hundreds of years by the local island herbalists. Ashitaba contains a variety of vitamins, minerals, proteins and plant fiber. This powerful strain of Angelica was unknown until recently. Only a few islanders knew of this herb and kept it a guarded secret.With the coming of the information age, news of this healing plant began to reach beyond the Seven Islands of Izu. The leaves and stems are used to extract a yellowish liquid from the plant.

The Properties and Therapeutic Uses of Ashitaba

In this section I will endeavor to explain the therapeutic actions of Angelica Keiskei Koidzumi or Ashitaba in terms of Traditional Chinese Medicine as practiced currently in the People's Republic of China. One of the fundamental actions of Ashitaba is that it is great at activating Qi and Xue (Blood). The application for this is apparent in the treatment in the menstrual problems. It removes stagnation in the uterus, which will help with many menstrual difficulties. It also increases blood flow (activates Qi and Blood). This herb, which can be used by it self alone, increases Kidney Yin and Yang Qi.

The increase of the Kidney Yang Qi will act as a diuretic and increase the urine output. In Japan, Ashitaba is used to treat hypertension. As a diuretic it has no side effects such as western medicines frequently have. It increases the libido (sex drive) for those persons with Kidney Yang Xu (deficiency). In terms of the increase in Kidney Yin Xu (deficiency), this herb is wonderful in treating the problem of Peri-menopause. With a Kidney Yin Xu (deficiency) one of the cardinal symptoms in women is irregular or no menstruation. The usual four to six years of peri menopause that women in their middle forties to early fifties in age experience could be made much more comfortable with the use of Ashitaba. Because this herb warms the uterus, it is very useful in treating menstrual cramps and pain, regardless of the age of the patient.

Ashitaba is a useful Lactagogue, that is, an agent which induces the secretion of mother's milk. There is anecdotal evidence from Japan of a cow that was fed Ashitaba and had record milk production. By analogy, Ashitaba could be used with mastitis or low milk production after delivery.

Ashitaba harmonizes the Spleen and Stomach. It helps to balance the Earth element. There is a patient in Texas that has Insulin- Dependent Diabetes that is currently taking the herb. He says that he now has to use less Insulin because his blood sugar no longer spikes with attacks of Hyperglycemia. Another Diabetes patient in Japan took Ashitaba for six months and his blood sugar level droped from 400 mg./dL to 150 mg./dL. Dr. Baba at Osaka University School of Pharmacy has published a paper showing the decrease of the rate of acid production in the stomach with Ashitaba. In her paper he also showed a decrease in the severity of stress related to stomach ulcers. The extract of Angelica Keiskei Koidzumi also exhibited an anti-bacterial action.

Research in Japan has shown that Ashitaba has anti- viral properties. At a 1993 Pharmacology Forum in Japan, it was reported that A a demonstrated antiHIV activity.

The Active Factors in Ashitaba

Chalcones are the active factors in Angelica Keiskei Koidzumi. The two that are in Ashitaba are known as Xanthoangelol and 4- Hydrooxyderricin. These were discovered by Dr. Baba. These factors are found only in this strain of Angelica and are derived from the yellowish liquid extract of the leaves and stems. This differentiates it from any other strain of Angelica.

Types of Angelica

The Angelica Family has a history as a medicinal herb and health food since ancient times in both China and Japan. In Mainland China and Taiwan the root of the Angelica Senesis has been popular for thousands of years and is frequently called the "Woman's Ginseng." Ashitaba, has an anti- viral property that is not present in Dang Gui (Tang Kuei). The Ashitaba extract is a gentler medicine that can be taken frequently and at bed time without the stimulating effect that Dang Gui has, especially on women. Because it is gentler, it can be tolerated better by peri- menopausal women.

Cancer Research and Ashitaba

Dr. Toru Okuyama at Meiji University, College of Pharmacy tested Ashitaba on mice with tobacco-induced lung cancer and skin melanomas. In this six month study the skin cancer mice were given an external application of the Ashitaba extract. The article stated that the cancer was controled-with this therapy. In the tobacco- induced lung cancer the mice were given the extract of Ashitaba in fluid and food form. The article stated that the lung cancer progression stopped with the oral Ashitaba therapy.

Related Scientific Studies on Ashitaba Varieties

Anti-tumor-promotion by principles obtained from Angelica keiskei.

Okuyama T, Takata M, Takayasu J, Hasegawa T, Tokuda H, Nishino A, Nishino H, Iwashima A.

Department of Pharmacognosy and Phytochemistry, Meiji College of Pharmacy, Tokyo, Japan.

Potent anti-tumor promoter activity has been found in the nonpolar extracts of the root of "Ashita-Ba", Angelica keiskei Koidz. (Umbelliferae), which is eaten as a vegetable in Japan. From this active fraction, two angular furanocoumarins, archangelicin (1) and 8(S),9(R)-9-angeloyloxy-8,9-dihydrooroselol (2), three linear furanocoumarins, psoralen (3), bergapten (4) and xanthotoxin (5), and three chalcones, 4-hydroxyderricin (6), xanthoangelol (7) and a novel chalcone named ashitaba-chalcone (8), were isolated. Among these compounds, two angular type furanocoumarins, 1 and 2, and three chalcones, 6-8,

suppressed 12-O-tetradecanoylphorbol-13-acetate (TPA)-stimulated 32Pi-incorporation into phospholipids of cultured cells, whereas coumarins 3-5 were less effective. In addition, chalcones 6 and 7 were proved to have anti-tumor-promoting activity in mouse skin carcinogenesis induced by 7,12-dimethylbenz[a]anthracene (DMBA) plus TPA. Since chalcones 6 and 7 showed calmodulin-interacting property, both chalcones may reveal anti-tumor-promoting activity via the modulation of calmodulin involved systems. These chalcones may be useful to develop the effective method for cancer prevention. Chem Pharm Bull (Tokyo) 1991 Jun;39(6):1604-5

Antibacterial activity of two chalcones, xanthoangelol and 4-hydroxyderricin, isolated from the root of Angelica keiskei KOIDZUMI.

Inamori Y, Baba K, Tsujibo H, Taniguchi M, Nakata K, Kozawa M.

Osaka University of Pharmaceutical Sciences, Japan.

Two chalcones, xanthoangelol (I) and 4-hydroxyderricin (II), isolated from the root of Angelica keiskei KOIDZUMI (Umbelliferae) showed antibacterial activity against gram-positive pathogenic bacteria. The activity of I on Micrococcus luteus IFO-12708 (minimum inhibitory concentration (MIC), 0.76 microgram/ml) was the same potency as that of gentamicin, which is used as a standard. Although the activity of both chalcones on plant-pathogenic bacteria was lower than that of streptomycin sulfate, used as a positive control, they also exhibited growth-inhibitory effects. The antibacterial activity of I isolated from Angelica keiskei KOIDZUMI is being reported here for the first time. The growth-inhibitory effect of II on plant-pathogenic bacteria is also reported for the first time in this paper. Pharmacol Ther 1991 Dec;52(3):331-63

Angelicins, Angular Analogs Of Psoralens: Chemistry, Photochemical, Photobiological And Phototherapeutic Properties.

Bordin F, Dall'Acqua F, Guiotto A.

Department of Pharmaceutical Science of Padua University, Centro di Studio sulla Chimica del Farmaco e dei Prodotti Biologicamente Attivi del C.N.R., Italy.

Angelicin and some of its derivatives are naturally occuring compounds which show interesting photobiological properties. In this review various aspects of angelicin and its derivatives have been reported. The natural occurrence and the chemical synthesis both of naturally occurring and synthetic angelicins have been reviewed. Photochemical and photophysical properties of angelicins have been considered with particular reference to the capacity to generate active forms of oxygen, photoreactions with nucleic acids, proteins and unsaturated fatty acids. Photobiological effects have been considered: skin phototoxicity, antiproliferative effects, genotoxicity, ability to induce hemolysis in erythrocytes, inactivation of prokaryotic and eukaryotic microorganism and of viruses. The ability of some angelicins

to induce photocarcinogenesis has been reviewed as well as in the activity as photochemotherapeutic agents. J Altern Complement Med 2000 Dec;6(6):557-9

The Effect Of A Traditional Chinese Prescription For A Case Of Lung Carcinoma.

Kamei T, Kumano H, Iwata K, Nariai Y, Matsumoto T.

Shimane Institute of Health Science, Izumo, Japan. kamei@hanken.shimane-med.ac.jp

OBJECTIVE: To examine the effectiveness of Ninjin Yoei To (NYT; Ren-Shen-Yang-Rong-Tang in Chinese medicine; Kotaro Pharmaceutical Co., Ltd., Osaka, Japan), one of the traditional herbal medicines, against lung carcinoma. SETTING: The Nursing Center Himawari DESIGN, PATIENT, AND PREPARATION: The regular dosage of NYT (15 g/d) was prescribed for 7 weeks to one elderly patient with lung carcinoma. The daily standard dose of NYT is prepared from dried extract obtained from 12 crude natural substances, ginseng, cinnamon bark, Japanese angelica root, astragalus root, peony root, citrus unshiu peel, rehmannia root, polygala root, atractylodes rhizome, schisanda fruit, poria sclerotium, and glycyrrhiza. NYT is certified by the Japanese Ministry of Health and Welfare. RESULTS: The tumor marker levels (CEA and CA19-9) decreased and the scores of yin-yang and xu-shi inverted from negative and positive during 7 weeks. The patient's cough disappeared and her appetite recovered. CONCLUSION: NYT has a positive effect on life expectancy for patients with malignancy. The diagnostic scoring system in yin-yang and xu-shi and prescription of Chinese herb may be available to gain control over a patient's health.

Biorheology 2003;40(1-3):395-9

Effect Of Angelica On The Expressional Changes Of Cytokines In Endothelial Cells Induced By Hyperlipidemic Serum.

Jing-Ping OY, Baohua W, Yongming L, Lei W, Jingwei Y.

Department of Pathophysiology, Medical College of Wuhan University, Wuhan, 430071, P.R. China. hybs@public.wh.hb.cn

The aim of this article was to examine the protective effect of Chinese traditional medicine angelica on human umbilical vein endothelial cells (HUVECs, ECV304) from injury induced by hyperlipidemic serum (HLS) and to study the underlying mechanism. Spectrophotometer and immunocytochemical methods were used to detect the content of nitric oxide (NO) in suspension and expression of intercellular adhesion molecule-1 (ICAM-1), transforming growth factor beta1 (TGFbeta1), basic fibroblast growth factor (bFGF) on the cell surface, respectively. After incubated with 50 microl/ml HLS for 24 hours, expression of ICAM-1 and bFGF in ECs was significantly increased, while expression of TGFbeta1 and the release of NO from ECs were significantly decreased. All these effect of HLS on ECs can be reversed by angelica significantly. The above effect of angelica may be related to its anti-atherosclerotic action. Our

findings provided experimental basement for the clinical application of angelica to prevent the development of atherosclerosis.

Clin Hemorheol Microcirc 2001;24(3):201-5

Effects Of An Angelica Extract On Human Erythrocyte Aggregation, Deformation And Osmotic Fragility.

Wang X, Wei L, Ouyang JP, Muller S, Gentils M, Cauchois G, Stoltz JF.

Group Cell and Tissue Mechanics and Engineering, LEMTA - UMR 7563 CNRS/INPL/UHP, 54500 Vandoeuvre-les-Nancy, France. xwang@ensem.inpl-nancy.fr

In Chinese traditional medicine, angelica is widely used for its known clinical effects of ameliorating blood microcirculation. But the mechanism of these beneficial effects still remains unclear. In this work the rheological behaviour of human erythrocytes treated by angelica was studied in vitro. Normal RBCs incubated with an angelica extract at different concentrations (5, 10 or 20 mg/ml) for 60 min at 37 degrees C and then their aggregation, deformation and osmotic fragility were measured with different recently developed optical techniques, namely Erythroaggregometer (Regulest, Florange, France), LORCA (Mechatronics, Amsterdam) and Fragilimeter (Regulest, Florange, France). Experimental results show that angelica (20 mg/ml) significantly decreased normal RBCs' aggregation speed ($p<0.01$) and could inhibit the hyperaggregability caused by dextran 500. However, the strength of normal RBCs aggregates were not influenced by angelica. When a calcium ionophore A23187 (1.9 microM) was used to harden cell membrane, angelica (20 mg/ml) could significantly ($p<0.01$) protect erythrocytes against the loss of their deformability even it had no effects on normal RBCs deformation. Finally angelica (5 and 10 mg/ml) decreased significantly ($p<0.01$) normal RBCs osmotic fragility. In conclusion angelica plays a rheologically active role on human erythrocytes, and this study suggests a possible mechanism for angelica's positive effects against certain cardiovascular diseases.

Arch Pharm Res 1991 Mar;14(1):87-92

Pharmacological Activities Of Water Extracts Of Umbelliferae Plants.

Kim CM, Heo MY, Kim HP, Sin KS, Pachaly P.

College of Pharmacy, Kangweon National Univ., Chuncheon, Korea.

In order to evaluate the pharmacological activities of Chinese medicine, nine Umbelliferae plants were selected and their restoring activity against dexamethasone-induced disorders, liver protective activity, antimicrobial activity, anti-inflammatory activity and antimutagenic activity were tested and compared. Angelica dahurica. Angelica acutiloba and Ostericum koreanum showed various activities in these tests at the dose used in this study.

"Ashita-Ba", Angelica keiskei Koidz. (Umbelliferae)

Analysis of Non-Polar Extracts

Angular Furanocoumarins:

Archangelicin - Angelicin and some of its derivatives are naturally occurring compounds which show interesting photobiological properties. In this review various aspects of angelicin and its derivatives have been reported. The natural occurrence and the chemical synthesis both of naturally occurring and synthetic angelicins have been reviewed. Photochemical and photophysical properties of angelicins have been considered with particular reference to the capacity to generate active forms of oxygen, photoreactions with nucleic acids, proteins and unsaturated fatty acids. Photobiological effects have been considered: skin phototoxicity, antiproliferative effects, genotoxicity, ability to induce hemolysis in erythrocytes, inactivation of prokaryotic and eukaryotic microorganism and of viruses. The ability of some angelicins to induce photocarcinogenesis has been reviewed as well as in the activity as photochemotherapeutic agents.

J Altern Complement Med 2000 Dec;6(6):557-98(S),9(R)-9-angeloyloxy-8,9-dihydrooroselol

Linear Furanocoumarins:

Psoralen

Bergapten

Xanthotoxin

Chalcones:

4-hydroxyderricin Anti-tumor-promoting activity in mouse skin carcinogenesis via the modulation of calmodulin involved systems - Chem Pharm Bull (Tokyo) 1991 Jun;39(6):1604-5 Antibacterial activity against gram-positive pathogenic bacteria. - Pharmacol Ther 1991 Dec;52(3):331-63

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