



# InterClinical Laboratories Practitioner Newsletter

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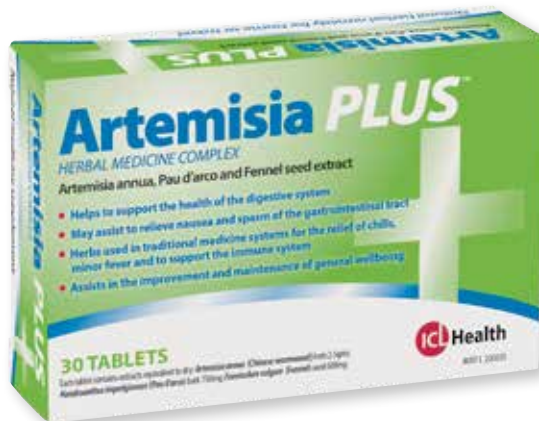


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## INTRODUCING ARTEMISIA PLUS

We are happy to introduce Artemisia Plus to the ICL Health family. Artemisia Plus is our new, improved and reformulated Parazyne, containing the same amount of standardised artemisinin from *Artemisia annua* as Parazyne, but with the added benefit of fennel seed and pau d'arco. Pau d'arco (*Handroanthus impetiginosus*) is a South American herb that has traditionally been used to treat many health issues including immune disorders and mild fevers. The addition of fennel seed (*Foeniculum vulgare*) adds to the digestive actions of Artemisia Plus, providing carminative, antispasmodic and expectorant actions. The combination of these three herbs means that our new Artemisia Plus Herbal Medicine Complex contains these added benefits for immune and digestive health. A versatile herbal medicine for home and away.



For more information on Artemisia Plus please see our website for the Artemisia Plus brochure and practitioner monographs on *Artemisia annua*, *Handroanthus impetiginosus* and *Foeniculum vulgare*. If you would like a hardcopy of either of these documents, please email us at lab@interclinical.com.au. Artemisia Plus is available to order now through our distributors in your state, alternatively, you can order directly from us at www.interclinical.com.au or call us on (02) 9693 2888 during office hours.

In this newsletter, we take a look at the three herbs; *Artemisia annua*, *Handroanthus impetiginosus* and *Foeniculum vulgare*. We hope that you enjoy this additional information on these highly regarded herbs. In the section 'Clinical updates for the health professional' we look at a study exploring the potential actions of Pau d'arco and Artemisia.

### Last Chance To Book For Sydney and Perth

Winter is here and we are halfway through our seminar series for 2014, **Runs in the family: Family health, generations and environmental overload**. We started our series this year in Adelaide, Brisbane and Melbourne and they have been a great success. We have received very encouraging feedback from our delegates:

*"Janine, excellent presentation of case histories – very practical."*

*"I could think of multiple cases from clinic/ personal cases in which this is incredibly relevant. A real eye opener and very exciting in the field of preventative health."*

*"So knowledgeable and authentic – amazing."*

*"Their enthusiasm and passion is admirable."*

*"Wow, what an amazing speaker. More of Janine please. The best I have heard."*

*"Zac is always a wealth of information."*

We are looking forward to the remainder of our seminars in Perth and Sydney through July, and Auckland in September. Details are available on the events page of our website at www.interclinical.com.au or call us for more information on (02) 9693 2888.

**Yours in health,**  
The Team at InterClinical Laboratories

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Hair Tissue Mineral  
Analysis Pathology

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Nutritional, Herbal and  
Natural Medicines

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Practitioner Education

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Research and  
Development

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*Artemisia annua*



*Handroanthus impetiginosus*



*Handroanthus impetiginosus* inner ste

## ARTEMISIA ANNUA

*Artemisia annua* (Chinese wormwood) is native to China, its ancient Chinese name Qing Hao literally means “green herb”.<sup>(1)</sup> It is a sweetly aromatic herb with bright green feathery leaves and small cream/yellow coloured flower heads.<sup>(2)</sup> It belongs to the Asteraceae family and is native to Eastern Europe and Asia. It has become naturalised in many countries and is cultivated on a commercial scale in eastern China, the Balkans, India and Africa.<sup>(3)</sup>

The name *Artemisia* may have been inspired by Artemis, the Greek goddess of hunting, the moon and chastity. It is also possible that it was inspired by Queen Artemisia of Caria (Helicarnassus), a Turkish botanist who lived about 400 B.C.E.<sup>(4)</sup> Historically, *Artemisia* spp. were used as strewing herbs to repel insects, and were also ingested to destroy parasitic worms.<sup>(5)</sup> *Artemisia annua* is so named as it is one of the only members of the genus with an annual cycle.<sup>(1)</sup>

Qing hao is a cooling herb according to Traditional Chinese Medicine and was used for a variety of ailments. Since ancient times, it has been taken as a useful tonic for dyspeptic conditions and against fever.<sup>(3)</sup> Common uses in Traditional Chinese Medicine included haemorrhoids, colds and flu, dysentery and diarrhoea. According to Chinese Medicine, its main indication is “bone steaming” and “heat vexation”.<sup>(6)</sup>

*Artemisia annua* contains many different classes of compounds including at least 28 monoterpenes, 30 sesquiterpenes, 12 triterpenoids and steroids, 36 flavonoids, 7 coumarins and 4 aromatic and 9 aliphatic compounds.<sup>(1)</sup> The main active compound Artemisinin or Qinghaosu, is a sesquiterpene lactone with an endoperoxide bridge.<sup>(3)</sup> Since the discovery of artemisinin, hundreds of derivatives have been synthesised, including artesunate, artemeter and dihydroartemisinin.<sup>(6)</sup>

*Artemisia annua* is known in literature for its anti-bacterial, anti-protozoal, anti-microbial and anti-parasitic actions. It has been shown to be effective against a wide variety of pathogens, including *Pneumocystis carinii*, *Schistosoma* spp, *Escherichia coli*, *Shingella dysenteriae* and *Staphylococcus aureus*.<sup>(7,8,9)</sup> Qinghao has also been shown to possess immunologic function. There have been contradictory results regarding whether artemisinin and its derivatives are immune-stimulating or immunosuppressive. It has been proposed that low doses are immune-stimulating, while high doses are immunosuppressive, although this remains unsubstantiated.<sup>(10)</sup>

While *Artemisia annua* is considered to be a safe herb, caution is recommended in pregnancy, and anyone taking angiogenic agents, or recovering from surgery, as Chinese Wormwood may inhibit angiogenesis.<sup>(10)</sup>

## HANDROANTHUS IMPETIGINOSUS

Pau d’arco is a huge canopy tree that is native to the Amazon rainforest and other parts of South America. It can grow to 30 metres high, and being some of the heaviest and most durable timber in the region, it is commonly used to build everything from houses to boats and farm tools.<sup>(11)</sup> It has rounded clusters of tubular flowers, mainly pink with a yellow throat.<sup>(12)</sup> There are

about a thirty species in the genus *Handroanthus*, formerly *Tabebuia* spp and they are common to the cities of South America for their colour and beauty.

Pau d’arco has in recent years been renamed as *Handroanthus impetiginosus* due to the genus *Tabebuia* being split into three separate genera, *Tabebuia*, *Handroanthus* and *Roseodendron*. The genera was split due to recent phylogenetic studies of DNA sequences which showed that *Tabebuia* spp is not monophyletic – i.e. all of the plants in the species do not share the same ancestors.<sup>(13)</sup>

Pau d’arco has been used traditionally as a folk medicine to treat inflammatory diseases, bacterial infection, viral infections, fungal infections, immune issues, fever and peptic ulcers. Different regions in South America had different specific uses for pau d’arco; it was used for coughs, colds and flu in the Amazon, in Argentina it was used mainly for urinary tract infections and diarrhoea, and it was used for fever and snakebites in Costa Rica. Traditionally, it was ingested as a decoction prepared from the inner bark of the tree and was considered as a ‘miracle tree’ and a general cure-all.<sup>(11,14)</sup>

The main active constituents that have been identified from *Handroanthus impetiginosus* are the naphthoquinones - lapachol and beta-lapachone. Lapachol was originally identified as the main active constituent of pau d’arco and was the focus of much of the early research, while the constituent that is the main focus in recent research is beta-lapachone.

Lapachol, beta-lapachone and its derivatives have been the subject of much research to investigate its potential mechanisms of action. Immune enhancing, anti-parasitic, anti-bacterial, anti-fungal, anti-viral, anti-coagulant, anti-platelet, anti-depressant and anti-ulcerogenic activities have all been the focus of research since the late 1960’s.<sup>(15)</sup>

While pau d’arco is generally considered to be a safe herb, it is contraindicated in women wishing to conceive, and in pregnancy and lactation.

## FOENICULUM VULGARE

Fennel is a member of the Apiaceae family and is related to cumin, dill, caraway and anise, all of which bear aromatic fruits that are named seeds. It is a hardy perennial umbelliferous herb, with feathery green leaves and yellow flowers. It is native to southern Europe, and is now naturalised in northern Europe, Australia and North America, and is cultivated in France, Saxony, Galicia, India and Persia.<sup>(16,17)</sup>

Energetically, fennel is spicy, sweet and warm, and has stimulant, carminative, antispasmodic and expectorant properties. It has been used dry roasted for urinary health, and has the ability to lower chi when mixed with salt, and raise chi when mixed with wine.<sup>(18)</sup>

The traditional uses of fennel are many. Fennel was cultivated by the ancient Romans for its aromatic fruits and the edible shoots. It was believed to be helpful with eyesight and to increase strength. It was employed during medieval times together with St Johns Wort and other herbs to hang over doors during Midsummers Eve



m bark

*Foeniculum vulgare**Foeniculum vulgare* seeds

to prevent witchcraft and other evil influences. Fennel was used by the ancient Egyptians as a medicine and food, and was considered a snake bite remedy in China. The ancient athenian Pheidippides was said to have carried a stalk of fennel on his 150 mile, 2 day run to Sparta to gather soldiers for the battle of Marathon in 490 B.C.<sup>(16, 17)</sup>

The digestive traits of this herb seem to have been known from ancient times. The ancient Greek name for the herb, Marathron from the word maraino, means to grow thin. It was also considered to be a symbol of success by the ancient Greeks. A quote from Nature's Paradise (1650), by William Coles states "both the seeds, leaves and root of our Garden Fennel are much used in drinks and broths for those that are grown fat, to abate their unwieldiness and cause them to grow more gaunt and lank."<sup>(16,17)</sup>

Traditionally, fennel juice was used in a syrup for chronic coughs, and was used to discourage fleas from kennels and stables. Culpepper suggested fennel be boiled with fish, "for it

consumes the phlegmatic humour which fish most plentifully afford and annoy the body with, though few that use it know wherefore they do it." Culpepper claims the benefits of this combination are due to fennel being a herb of Mercury, and under Virgo, therefore being the antipathy to Pisces.<sup>(17)</sup>

The fruit of the fennel plant contains at least 4% of a volatile oil, with the primary active constituents being anethol and fenchone.<sup>(19)</sup> It has a strong carminative action, and together with sodium bicarbonate and syrup, is part of the traditional remedy named "gripe water".<sup>(17)</sup> Research has shown fennel seeds to have spasmolytic, galactagogue, anti-emetic and expectorant actions.<sup>(15)</sup>

While fennel seeds are utilised as a food, they should be avoided in known allergy and are not recommended for use during pregnancy.

*References available on request*

## CLINICAL UPDATES FOR THE HEALTH PROFESSIONAL

### Antimicrobial activity of Artemisinin and Precursors

*Artemisia annua* L. is a medicinal herb that has demonstrated antimicrobial activity. In this study, the leaves of three *in vitro* *Artemisia annua* clones were used to extract artemisinin and a precursor to artemisinin, which were isolated by thin layer chromatography. Both artemisinin and the precursor were found to be effective in inhibiting the growth of Gram-positive bacteria and Gram-negative bacteria, although not *Candida albicans*. The antibactericidal antibiotic streptomycin was used as a control, and artemisinin and its precursor both showed a similar antimicrobial activity. The Minimum Inhibitory Control of these constituents was found to inhibit the growth of the tested microbes at a measurement of 0.09 mg/mL.

Appalasaamy, S., et al. Antimicrobial Activity of Artemisinin and Precursor Derived from In Vitro Plantlets of *Artemisia annua* L., *BioMed Research International*, 2014, Article ID 215872, 6 pages.

**Comments:** This study identified that the active constituent of *Artemisia annua*, artemisinin and its precursor, demonstrated antimicrobial activity. This antimicrobial activity of artemisinin and its precursor showed it was comparable to the antibiotic streptomycin. This study adds to the research that suggests that *Artemisia annua* possesses antimicrobial properties against both Gram-positive and Gram-negative bacteria.

### The anti-inflammatory effects of beta-lapachone in human endothelial cells

Endothelial cell damage has been regarded as a critical event in several disease processes. The damage to these endothelial cells is thought to be induced by uncontrolled formation of reactive oxygen species (ROS), and one cause of excessive ROS formation is tumour necrosis factor alpha-a (TNF-a). Human vascular endothelial cells were used *in vitro* to test; cytoprotection using TNF-alpha and beta-lapachone, to evaluate AMPK activation by treating them with beta-lapachone and to test for TNF-a mediated apoptosis by flow cytometry. Beta-lapachone, isolated from the bark of the *Handroanthus impetiginosus* tree, is a substrate of NAD(P)H:quinone oxidoreductase 1 (NQO1), which catalyses the oxidation of NADH to NAD+. This reaction activates AMP-activated protein kinase (AMPK), which in itself has been shown to have cytoprotective and anti-inflammatory effects on endothelial cells. AMPK activation also stimulates the expression of the cytoprotective and anti-inflammatory heme oxygenase (HO)-1. These results demonstrate that beta-lapachone may have the potential to protect endothelial cells by activating AMPK and stimulating HO-1.

Byun, S.J. et al. 2014, Cytoprotective effect of Beta-lapachone by inducing heme oxygenase-1 expression and AMP-activated protein kinase activation in human endothelial cells, *European Review for Medical and Pharmacological Sciences*, (18): 949-958.

**Comment:** This study illustrates the potential anti-inflammatory and anti-oxidant effects of one of the active constituents of *Handronathus impetiginosus*, beta-lapachone. By activating AMPK and therefore HO-1, it was shown that beta-lapachone may exhibit anti-inflammatory and antioxidant effects, potentially reducing the inflammation associated with endothelial cell damage.

## Runs in the Family... Family Health, Generations & Environmental Overload

EXPOSING NUTRITIONAL ANOMALIES, METABOLIC DYSFUNCTIONS & TOXICITY IN PARENTS AND CHILDREN TO IMPROVE CLINICAL OUTCOMES

### HTMA Primary Course – Saturday

Introduction to Hair Tissue Mineral Analysis in Clinical Practice

- Overview of essential minerals
- Toxic and heavy metals
- Mineral synergists and antagonists
- Importance of mineral ratios
- Endocrine relationships
- Report interpretation and metabolic typing
- Case studies and examples
- Hair sampling, procedures and laboratory overview

### HTMA Secondary Course – Sunday

Family Health, Generations & Environmental Toxicity

- Occupational and household toxicity
- The effect of toxicity on the whole family
- Mineral imbalances – mums, nannas, children and teens
- Dads bringing their work home with them
- Exploring sibling patterns using HTMA
- Inherited patterns of disease – mother & child & genetic factors
- Case studies and examples
- Advanced report interpretation
- Building your business with HTMA – an interactive discussion.

#### PRESENTED BY:



**Zac Bobrov**  
Technical Director,  
InterClinical Laboratories

Zac is a prolific educator, avid researcher and engaging lecturer with over 20 years' experience in the field of nutritional and environmental medicine.



**Janine Castle**  
Naturopath, BSc. Dip Appl Sci (Nat)

Janine Castle is a Naturopath with 20 years of clinical practice experience in the area of family healthcare and uses nutraceuticals, homeopathy and herbal medicines with HTMA and Functional Pathology testing.

#### 2014 SEMINAR DATES & VENUES:

**Perth** 19th & 20th July  
Ibis Styles

**Sydney** 26th & 27th July  
Vibe Hotel

**Auckland (NZ)** 6th & 7th of Sept  
Novotel Ellerslie

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bookings

For full seminar program details and ticket prices, please contact InterClinical Laboratories or register on-line.

Phone: (02) 9693 2888 Fax: (02) 9693 1888 On-line registrations: [www.interclinical.com.au/events](http://www.interclinical.com.au/events)

# BETTER THAN EVER... Artemisia Plus

## HERBAL MEDICINE COMPLEX FOR HOME AND TRAVEL

NOW AVAILABLE FROM LEADING HEALTH CARE SUPPLIERS



InterClinical Laboratories are proud to announce the release of the **new and improved reformulation of Parazyne**.

**ARTEMISIA PLUS Herbal Medicine Complex** combines the same potent dosage of *Artemisia annua* (Chinese Wormwood) as our reliable **Parazyne** formula, but now also contains the additional health care benefits of Pau d'arco inner bark and Fennel seed extracts for a better, more useful and very palatable herbal remedy.

**Artemisia Plus** includes herbs used in traditional medicine systems to help relieve chills and minor fevers, help support healthy immune function and improve general wellbeing. Helps support the health of the digestive system. May help to relieve spasm of the gastrointestinal tract, flatulence, bloating and nausea. Artemisia Plus is a versatile herbal medicine which can be utilised as part of a treatment plan.

Bringing ancient Eastern remedies and Western Medicine together to deliver century's old wisdom for natural healthcare.

For more information, please contact:

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 **Vegan  
friendly**

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