

Herbal medicine in practice

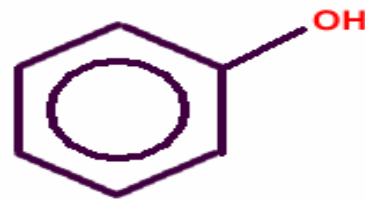


Presentation at the College of Medicine Science Council Seminar "Putting Herbal Medicines into Practice", 6 July 2011 at the Royal Botanic Gardens, Kew. Distributed with permission from presenter. The views expressed in this presentation are that of the speaker and do not necessarily reflect the views or policies of the College of Medicine. The College of Medicine does not guarantee the accuracy of the data included in this paper and accepts no responsibility for any consequence of their use.

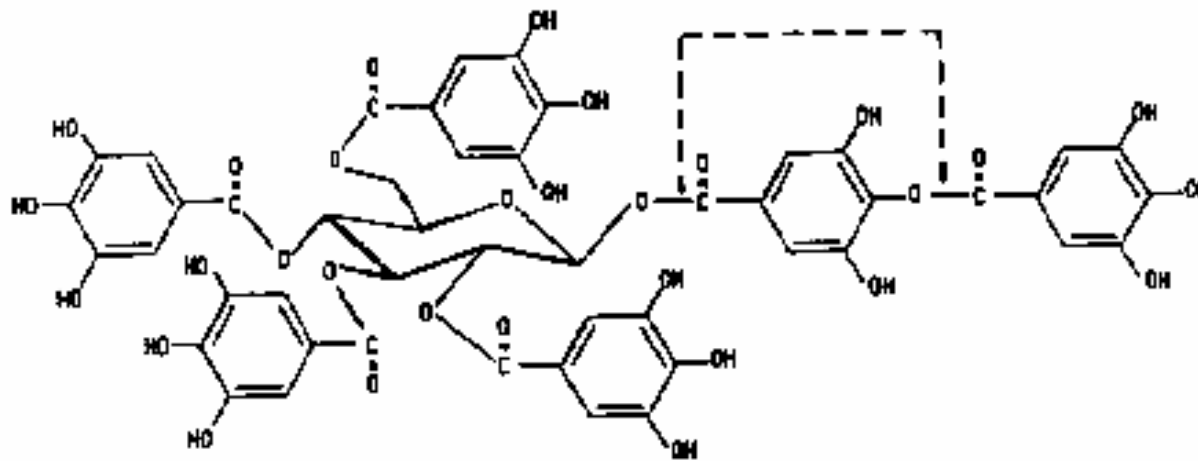
Mutual adaption - Plant biochemistry well suited to the human system

- Plants and humans have evolved together over hundreds of thousands of years & plant molecules are familiar to human system. Herbal medicines relatively well tolerated with fewer adverse reactions than pharmaceutical drugs although natural doesn't equal safe!
- Herbal medicines effective tools to restore disrupted physiology as in many chronic functional disorders e.g. IBS, migraine, insomnia, fibromyalgia, non-specific joint pain, irritable bladder, insomnia and tiredness, low mood and anxiety.
- Because of emphasis to restore normal physiological balance rather than treating particular diseases, herbal medicines often described in terms of their actions — carminative, laxative, demulcent, antitussive, expectorant, sedative, antiseptic, or astringent.
- Many plants synthesize substances that are useful to the maintenance of health in humans. These include aromatic substances, most of which are phenols or their derivatives such as tannins. Many are secondary metabolites, of which at least 12,000 have been isolated — estimated to be less than 10% of the total. In many cases, these substances (e.g. alkaloids and tannins) serve as plant defence mechanisms against predation by microorganisms, insects, and herbivores.

Phenols and their derivatives - tannin



Phenol - benzene ring
+hydroxyl



gallotannin

**Traditional use
acknowledged by The Traditional Herbal Medicinal Products
Directive 2004/24/EC**

- “The long tradition of the medicinal product makes it possible to reduce the need for clinical trials, in so far as the efficacy of the medicinal product is plausible on the basis of long-standing use and experience.
- “Pre-clinical tests do not seem necessary, where the medicinal product on the basis of the information on its traditional use proves not to be harmful in specified conditions of use.
- “However, even a long tradition does not exclude the possibility that there may be concerns with regard to the product's safety, and therefore the competent authorities should be entitled to ask for all data necessary for assessing the safety. The quality aspect of the medicinal product is independent of its traditional use so that no derogation should be made with regard to the necessary physico-chemical, biological and microbiological tests.”

Willow bark

- “Willow bark extract is frequently used in the treatment of arthritis and back pain. Its effect has been attributed to its main component salicin, but pharmacological studies have shown that the efficacy of willow bark extract cannot be explained by its salicin content alone. Therefore different modes of action have been suggested for the anti-inflammatory effect of willow bark extract. Here, we report in vitro data revealing the effect and mode of action of the aqueous willow bark extract as well as a water-soluble fraction in comparison with well-known non-steroidal anti-inflammatory drugs (NSAIDs) like aspirin and diclofenac on pro-inflammatorily activated human monocytes and differentiated macrophages.
- **Conclusions.** In vitro investigations suggest a significant anti-inflammatory activity of willow bark water extract and of its water-soluble fraction by inhibiting pro-inflammatory cytokines (TNF α), COX-2 and nuclear translocation of the transcription factor NF- κ B in pro-inflammatorily activated monocytes.”
- [Anti-inflammatory effects of the willow bark extract STW 33-I \(Proaktiv®\) in LPS-activated human monocytes and differentiated macrophages.](#) Bonaterra GA, Heinrich EU, Kelber O, Weiser D, Metz J, Kinscherf R. *Phytomedicine*. 2010 Dec 1;17(14):1106-13. Epub 2010 May 31



Aspirin from meadowsweet

- Aspirin named after *Spirea ulmaria*, meadowsweet.
- “willow species contain only a low quantity of the prodrug salicin which is metabolized during absorption into various salicylate derivatives. If calculated as salicylic acid, the daily salicin dose is insufficient to produce analgesia. Salicylic acid concentrations following an analgesic dose of aspirin are an order of higher magnitude.
- Flavonoids and polyphenols contribute to the potent willow bark analgesic and anti-inflammatory effect. The multi-component active principle of willow bark provides a broader mechanism of action than aspirin and is devoid of serious adverse events.
- In contrast to synthetic aspirin, willow bark does not damage the gastrointestinal mucosa.”
- [Willow Species and Aspirin: Different Mechanism of Actions.](#)
Vlachojannis J, Magora F, Chrubasik S. *Phytother Res.* 2011 Jan 12. doi: 10.1002/ptr.3386



Synergy

2 + 2 = 5 or sometimes 3....

- A single medicinal plant contains an orchestra of chemicals
- The therapeutic effect of the whole plant tends to be more than the action of its individual constituents. In this context, two and two turns out to add up to rather more than four!
- Around 120 current licensed drugs originally derived from plants- e.g. aspirin from willow, steroids from the Mexican yam, digoxin from foxglove, theophylline from tea, morphine from the opium poppy etc, etc.
- The extracted isolated active is perceived as superior to its plant source. Plants valued by the pharmaceutical industry for their perceived “actives “;the remaining “inert” constituents are generally discarded.
- Significant number of pharmaceutical medicines derived from plants are used in ways that correlate with their traditional uses as plant medicines.

Pharmacodynamic synergy

- Results from the enhancement of action when two drugs are directed at a similar receptor target or physiological system.
- A herbal example of this process can be seen in the constituents of senna, Sennocide A and Sennocide C.
- Separately these have a similar laxative action but a mixture of these two compounds in the ration 7:3 (which is more or less the naturally occurring ratio found in senna) all but doubles the laxative effect.

Pharmacokinetic synergy

- Results from alteration of the processes of drug absorption, distribution, metabolism or elimination.
- Herbs rich in iron and vitamin C such as nettles or watercress used to combat iron-deficiency anaemia. The simultaneous ingestion of vitamin C improves the absorption of iron.
- On the other hand, because of its tannin content, drinking tea at mealtimes may inhibit iron as well zinc and copper absorption by decreasing their bioavailability.
- Both grapefruit juice and St John's wort exert a significant but contrary effect on an liver enzyme system cytochrome P450 responsible for metabolizing a range of drugs. Grapefruit - a potent inhibitor of CYP3A4, slowing the metabolism of several drugs to about half normal rate. St John's wort (via CYP - 3A4 & 2C19) markedly induces the metabolism of many medicines e.g. Warfarin.

Synergy in conventional medicine

- Pharmacologists now acknowledge that the individual actions of one drug are subject to modification by a second drug and that multi-drug regimens AKA *combination therapy* confers beneficial new actions that do not occur when using each drug on its own.
- It has been established that combination drug therapy can deliver greater therapeutic effect than can be achieved with a single conventional medicine.
- Moreover, it has become evident that combination therapy can attain the same therapeutic effect as when using a single drug, but with fewer deleterious side effects.

Herbs fill a therapeutic void

- Often the doctor has nothing between something he/she would rather not prescribe and nothing at all!
- Herbal medicines fill this therapeutic gap !
- E.g. Valerian and hops for sleep....



Herbs in practice

9 to try.....

- Devil's claw – osteoarthritis & back pain
- Echinacea – colds and flu
- St John's wort – low mood disorder
- Ginseng – tiredness, stress, poor concentration, convalescence
- Hawthorn – high blood pressure, anxiety, palpitations
- Dandelion – fluid retention, indigestion, constipation, overloaded liver & boils and acne
- Sage – Sore throats, colds, menopausal sweats, indigestion
- Chasteberry - PMS
- Passionflower – insomnia & stress

And for external use

- Chickweed –dry, irritated skin
- Aloe vera – burns and irritated skin
- Calendula – antiseptic and healing
- Oregon grape root – weeping skin conditions
- Chamomile – inflamed skin
- Horse chestnut – varicose veins
- Witch hazel – bruises and eczema
- Oats – soothes and cleanses irritated skin



Harpagophytum procumbens

Devil's claw



- [Effects of Harpagophytum procumbens LI 174 \(devil's claw\) on sensory, motor und vascular muscle reability in the treatment of unspecific back pain](#). Göbel H, Heinze A, Ingwersen M, Niederberger U, Gerber D. Schmerz. 2001 Feb;15(1):10-8
- A total of 31 patients in the verum group and 32 in the placebo group were treated. After four weeks of treatment there was found to be a clear clinical efficacy. Highly significant effects were found in the visual analogue scale, the pressure algometer test, the muscle stiffness test and the muscular ischaemia test. No serious adverse effects occurred.
- **Conclusions:** A highly significant clinical efficacy was achieved with a monotherapy of Harpagophytum dry extract after four weeks' treatment at a dosage of 2x480 mg/day in cases of slight to moderate muscular pain ... treatment with Harpagophytum extract LI 174 may be expected to have a significant influence on sensory and vascular muscular response and bring about a reduction in muscle stiffness.
- [Effect of isolated fractions of Harpagophytum procumbens D.C. \(devil's claw\) on COX-1, COX-2 activity and nitric oxide production on whole-blood assay](#). Anauate MC, Torres LM, de Mello SB. Phytother Res. 2010 Sep;24(9):1365-9.
- Study evaluated the effect of isolated fractions of Harpagophytum procumbens (devil's claw) on cyclooxygenase (COX-1 and COX-2) activities and NO production using a whole blood assay.. Data shows that fraction containing the highest concentration of harpagoside inhibited indistinctively COX-1 and COX-2 (37.2 and 29.5% respectively) activity and greatly inhibited NO production (66%). In contrast the fraction including iridoid pool increased COX-2 and did not alter NO and COX-1 activities. The fraction containing cinnamic acid was able to reduce only NO production (67%).
- Our results demonstrated that the harpagoside fraction is mainly responsible for the effect of devil's claw on these enzyme activities. However, other components from devil's claw could antagonize or increase the synthesis of inflammatory mediators.

Echinacea angustifolia, E. pallida, and E. purpurea root or leaf?

- Echinacea research and the common cold/flu equivocal
- Problems with part of plant
- Dosage
- Trial designs
- recent trial [Echinacea for treating the common cold: a randomized trial.](#)
- Barrett B, Brown R, Rakel D, Mundt M, Bone K, Barlow S, Ewers T. Ann Intern Med. 2010 Dec 21;153(12):769-77.
- **My recommendations** - For adults...take a tincture of *E. angustifolia*. Echinacea contains many active ingredients including alkylamides, cichoric acid and polysaccharides. The active alkylamides found in significant quantities in the roots of the angustifolia species.
- 5 mL of a 1:5 tincture (45% ethanol) of *E. angustifolia* root in water about every 3 hours, throughout the day, thus taking approximately 20–25 mL per day. This corresponds to a dose of approximately 4–5 g of the dried root per day.

“our own interpretation is that there is likely a small beneficial effect attributable to echinacea’s pharmacological activity.”





Passionflower

Passiflora incarnata



- [A Double-blind, Placebo-controlled Investigation of the Effects of Passiflora incarnata \(Passionflower\) Herbal Tea on Subjective Sleep Quality.](#) Ngan A, Conduit R. *Phytother Res.* 2011 Feb 3. doi: 10.1002/ptr.3400
- “*Passiflora incarnata* is a traditional herbal sedative, anxiolytic used for the treatment of sleep disturbance. The aim of the present study was to investigate the efficacy of *Passiflora incarnata* herbal tea on human sleep, as measured using sleep diaries validated by polysomnography (PSG).
- This study featured a double-blind, placebo-controlled, repeated-measures design with a counterbalanced order of treatments (passionflower vs placebo tea), separated by a 1 week 'washout' period. Forty-one participants (18-35 years) were exposed to each treatment for a week, whereby they consumed a cup of the tea and filled out a sleep diary for 7 days, and completed Spielberger's state-trait anxiety inventory on the seventh morning. Ten participants also underwent overnight PSG on the last night of each treatment period.
- **Conclusion:** sleep quality showed a significantly better rating for passionflower compared with placebo. These findings suggest that the consumption of a low dose of *Passiflora incarnata*, in the form of tea, yields short-term subjective sleep benefits.
- Recommended dosage; two teaspoons of dried herb to a cup of boiling water. Drink before retiring.

Panax ginseng

Ginseng root

- Use for convalescence after long-term or serious illness
- Use for aging
- Use for boosting immunity
- Use for low libido/menopause
- Use to combat stress
- Use to improve mental alertness, concentration and memory



Ginseng research



- Scores of papers show efficacy but no high quality trails - See [Ginseng for cognition](#). Geng J, Dong J, Ni H, Lee MS, Wu T, Jiang K, Wang G, Zhou AL, Malouf R. *Cochrane Database Syst Rev*. 2010 Dec 8;(12):CD007769.
- “Nine randomized, double-blind, placebo controlled trials meeting the inclusion criteria were identified. Eight trials enrolled healthy participants, and one was of subjects with age-associated memory impairment. Only five of the identified trials had extractable information and were included in the analysis. Four studies investigated the effects of ginseng extract and one assessed the efficacy of ginseng compound. Pooling the data was impossible owing to heterogeneity in outcome measures, trial duration, and ginseng dosage.
- Results of the analysis suggested improvement of some aspects of cognitive function, behaviour and quality of life. No serious adverse events associated with ginseng were found.
- Other species easily confused with *P. ginseng*...
- American ginseng (*P. quinquefolium*)
- Pseudoginseng or San Qi (*P. Notoginseng*)
- Siberian ginseng (*Eleutherococcus senticosus*)
- Brazilian ginseng (*Pfaffia paniculata*) AKA Suma.

St John's wort

Hypericum perforatum



- [Comparison of an extract of hypericum \(LI 160\) and sertraline in the treatment of depression: a double-blind, randomized pilot study.](#) Brenner R, Azbel V, Madhusoodanan S, Pawlowska M. *Clin Ther.* 2000 Apr;22(4):411-9.
- In a double-blind, randomized study, 30 outpatients with mild to moderate depression received 600 mg/d of a standardized extract of hypericum (LI 160) or 50 mg/d sertraline for 1 week, followed by hypericum 900 mg/d or sertraline 75 mg/d for 6 weeks.
- **Results:** Scores on depression scales significantly reduced in both treatment groups. Clinical response was noted in 47% of patients receiving hypericum and 40% of those receiving sertraline. Both agents were well tolerated.
- **Conclusion:** The hypericum extract was at least as effective as sertraline in the treatment of mild to moderate depression in a small group of outpatients.
- Hypericin formerly thought to be the active component. Now hyperforin, adhyperforin, and other related compounds found active.
- Other active constituents, e.g. flavonoids and tannins, are also thought to play a role in the plant's antidepressant activity.
- Both hyperforin and adhyperforin appear to modulate the effects of serotonin, dopamine, and noradrenaline and to cause cortisol stimulation in a dose-dependent manner.
- One reviewer, Nathan, observed that *Hypericum perforatum* "has a unique pharmacology in that it displays the pharmacology of many different classes of antidepressants"

Hawthorn -Crataegus spp.

Meta-analysis by Pittler MH, Schmidt K, Ernst E.

(Am J Med. 2003 Jun 1;114(8):665-74.)

- Meta-analysis to assess the evidence from rigorous clinical trials of the use of hawthorn extract to treat patients with chronic heart failure. To be included, studies were required to state that they were randomized, double-blind, and placebo controlled, and used hawthorn extract monopreparations.
- Thirteen trials met all inclusion criteria. In most of the studies, hawthorn was used as an adjunct to conventional treatment. Eight trials including 632 patients with chronic heart failure provided data that were suitable for meta-analysis. For the physiologic outcome of maximal workload, treatment with hawthorn extract was more beneficial than placebo. The pressure-heart rate product also showed a beneficial decrease with hawthorn treatment. Symptoms such as dyspnoea and fatigue improved significantly with hawthorn treatment as compared with placebo. Reported adverse events were infrequent, mild, and transient.
- In conclusion, these results suggest that there is a significant benefit from hawthorn extract as an adjunctive treatment for chronic heart failure.

Maurice Mességué & ESCOP on the benefits of hawthorn

Messegue - flowers for

- Gout
- Pleurisy
- Vaginal discharge
- Kidney stones
- Regulate heart beat& treats palpitations
- Blood pressure lowering
- Arteriosclerosis
- Angina
- Obesity
- Tranquilliser good for anxiety
- Tinnitus
- Insomnia
- Cholesterol lowering

Bark for fever and **berries** for diarrhoea

- ESCOP monograph- Flowers and leaves – support cardiac and circulatory functions. Nervous heart complaints.....



Dandelion root and leaf

Taraxacum officinalis

Leaf

- Known as “pis en lit” for its effect on children when used in salads.
- Folk use as a diuretic and anti-inflammatory.
- See [The diuretic effect in human subjects of an extract of Taraxacum officinale folium over a single day](#). Clare BA, Conroy RS, Spelman K. J Altern Complement Med. 2009 Aug;15(8):929-34.
- “There was a significant increase in the frequency of urination in the 5-hour period after the first dose. There was also a increase in the excretion ratio in the 5-hour period after the second dose of extract.”



Root

- Excellent bitter digestive used in dyspepsia and heartburn.
- Cholagogue and liver cleanser. Hepatoprotective.
- Good for sluggish bowels – mild laxative.
- Good for skin infections, boils and acne.
- See [In vitro and in vivo hepatoprotective effects of the aqueous extract from Taraxacum officinale \(dandelion\) root against alcohol-induced oxidative stress](#). You Y, Yoo S, Yoon HG, Park J, Lee YH, Kim S, Oh KT, Lee J, Cho HY, Jun W. Food Chem Toxicol. 2010 Jun;48(6):1632-7. Epub 2010 Mar 27
- [Anti-inflammatory activity of Taraxacum officinale](#). Jeon HJ, Kang HJ, Jung HJ, Kang YS, Lim CJ, Kim YM, Park EH. Ethnopharmacol. 2008 Jan 4;115(1):82-8. Epub 2007 Sep 15.

Vitex Agnus castus

Chasteberry AKA “Monk’s Pepper”

- [Herbal treatments for alleviating premenstrual symptoms: a systematic review.](#) Dante G, Facchinetti F. *J Psychosom Obstet Gynaecol.* 2011 Mar;32(1):42-51. Epub 2010 Dec 21.
- “*Vitex agnus castus* was the more investigated remedy (four trials, about 500 women), and it was reported to consistently ameliorate PMS better than placebo.”



Sage

Salvia officinalis



- Good for sore throats as a gargle (+ cider vinegar and honey) and mouth ulcers as mouthwash.
- As a tea drunk hot good for treating colds and flu.
- Improves digestion and alleviates gastrointestinal bloating and discomfort after a heavy meal or in IBS.
- Improves concentration and memory – combine with rosemary , lemon balm (*Melissa officinalis*) and mint.
- Tea drunk at room temperature can alleviate menopausal sweating.
- [Treatment of neurovegetative menopausal symptoms with a phytotherapeutic agent.](#) De Leo V, Lanzetta D, Cazzavacca R, Morgante G. Minerva Ginecol. 1998 May;50(5):207-11.





External use



- Chickweed – for dry itchy skin
- Calendula – for infections as a wash or tincture or ointment.
- Oregon grape root – for seborrhoeic dermatitis as a wash and ointment
- Chamomile – soothing ointment for irritated skin and dry ectopic eczema
- Oat baths for irritated skin
- Horse chestnut – for varicose veins
- Witch hazel for bruising and inflamed eczema
- Aloe vera – for burns and irritated dry skin





Plant medicine

Ancient medicine for a modern time

- *Excellent herbs had our fathers of old
Excellent herbs to ease their pain
Alexanders and Marigold,
Eyebright, Orris, and Elecampane
Basil, Rocket, Valerian, Rue,
(Almost singing themselves they run)
Vervain, Dittany, Call-me-to-you
Cowslip, Melilot, Rose of the Sun.
Anything green that grew out of the
mould
Was an excellent herb to our fathers of
old. **Rudyard Kipling***
- *Who would therefore looke dangerously
up at Planets that might safely look
downe at Plants?
John Gerard, 'Herball' (1597)*
- *In all Diseases strengthen the part of the
Body afflicted.
Nicholas Culpeper (1616-1654)*

- “All substances are poisonous; there is none which is not a poison. The right dose differentiates a poison and a remedy”. - --
Paracelsus
- When Buddha selected his personal physician , he sent several doctors into the forest with the task of finding as many plants as they could with *no* medicinal value. Each doctor brought back many samples of plants that they felt had no value. One physician, Jivaka, returned empty handed. He said. "I am afraid I have failed you. I have spent much time in the in the forest but found no plant without value."
- Hearing this, Buddha selected Jivaka as his personal physician.



Ipsos MORI poll for MHRA November 2008

Millions of UK citizens use herbal medicines

- More than a quarter of the population had bought herbal medicines over-the-counter in the previous two years;
- One in twelve had consulted a practitioner of Western herbal medicine;
- One in twenty had consulted a practitioner of traditional Chinese Medicine;
- 77% of adults agree it is important that herbal medicines are regulated, with this figure rising to 87% among regular users of herbal medicines.

The impetus for regulation of herbalists and acupuncturists.



- House of Lord's Report 2000.
- Acupuncture and Herbal Medicine Practitioners should be statutorily regulated.
- Herbal medicines must have assured quality and safety.

EU Directive 24/2004/EC

THMPD

- sets new OTC standards for sale of herbal medicines which must be registered (THR).
- Became law in EU April 2004(adopted UK 2005) full implementation April 30th 2011. In UK this has replaced S12(2) of 1968 Medicines Act for OTC products.
- Aims to ensure correct identification of medicinal plants and adoption of GMP by suppliers and manufacturers. Plans to bring in GACP too.
- Requires that OTC herbals demonstrate 30 years safe use for registration, 15 years of which within the EU.
- Monographing herbal safety and efficacy by the European Medicines Agency Committee on Herbals
- Permits limited medicinal claims on THMPD products

February 16th 2011

Health Secretary Andrew Lansley announces in a written statement to Parliament that all those prescribing herbal medicines under section 12.1 of the 1968 Medicines Act are to be statutorily regulated under the Health Professions Council.

Benefits of SR

- Patients can get herbal treatment from well-trained, responsible health professionals who know the limits of their competence and when to refer.
- Enables referrals and interprofessional - working across professional boundaries for the benefit of patients and in the interests of patient choice.
- Will enable doctors to become au fait with the therapeutic scope offered by herbal treatment.
- Herbal medicine offers potential savings to NHS.

Graham

ARE YOU THE ONE
WHO WANTED A
SECOND OPINION?

NIL BY
MOUTH

CHARLES'
CALL FOR
ALTERNATIVE
MEDICINE

