

# Using Herbal Medicine within an Integrative and Functional Approach

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## Aims of this session:

- To introduce herbal medicine and it's role in an IM model
- To introduce some key phytonutrients and herbal actions
- Review 2 clinical cases covering recurrent UTI's and childhood eczema
- Take a dive into the research supporting the use of some common medicinal herbs
- Review using herbal medicine safely
- Take home tips



# What is herbal medicine?

- Herbal medicine, or phytotherapy, refers to using a plant's seeds, berries, roots, leaves, bark or flowers for medicinal purposes
- Herbal Medicine has thousands of years of global traditional use
- Improvements in plant analysis and quality control alongside clinical research have led to recognition of it as a useful and effective tool in treating and preventing acute and chronic disease
- The World Health Organization estimates that 80% of people worldwide rely on herbal medicines for some part of their primary health care
- It can be an invaluable therapeutic approach within an IM toolbox



# Why are herbs relevant in today's healthcare climate?

- Being multi-targeted herbs are particularly helpful in chronic conditions
- They can be used to modulate and balance – useful in immune dysregulation and hormone imbalance
- Many have anti-inflammatory and antioxidant actions, helping to address the root causes of a wide range of chronic health conditions
- They are often tolerated very well, with fewer side effects of conventional medications
- With strongly antibacterial and antimicrobial effects, they can make an ideal first line treatment strategy for dealing with minor infections, reducing antibiotic use and resistance
- They can be relatively cheap compared to many prescription drugs so may be a more cost effective treatment



# Conditions which can benefit from herbal medicine

**Gastrointestinal tract** – IBS, GORD, inflammatory bowel disease, diverticulitis

**Musculoskeletal system**- osteo and rheumatoid arthritis, fibromyalgia

**Nervous system** – migraines, depression, anxiety, insomnia, burnout, stress, CFS

**Skin** – eczema, psoriasis, acne

**Respiratory tract** – asthma, bronchitis, hayfever, sinusitis, colds and flu

**Cardiovascular system** – mild hypertension, hyperlipidaemia, venous insufficiency/ ulcers

**Gynaecological system** – PCOS, endometriosis, menopause, PMT

**Urinary system** – recurrent cystitis, vaginal infections, BPH

**Immune system** – recurrent infections, autoimmunity, allergies





## Types of Herbal Extractions

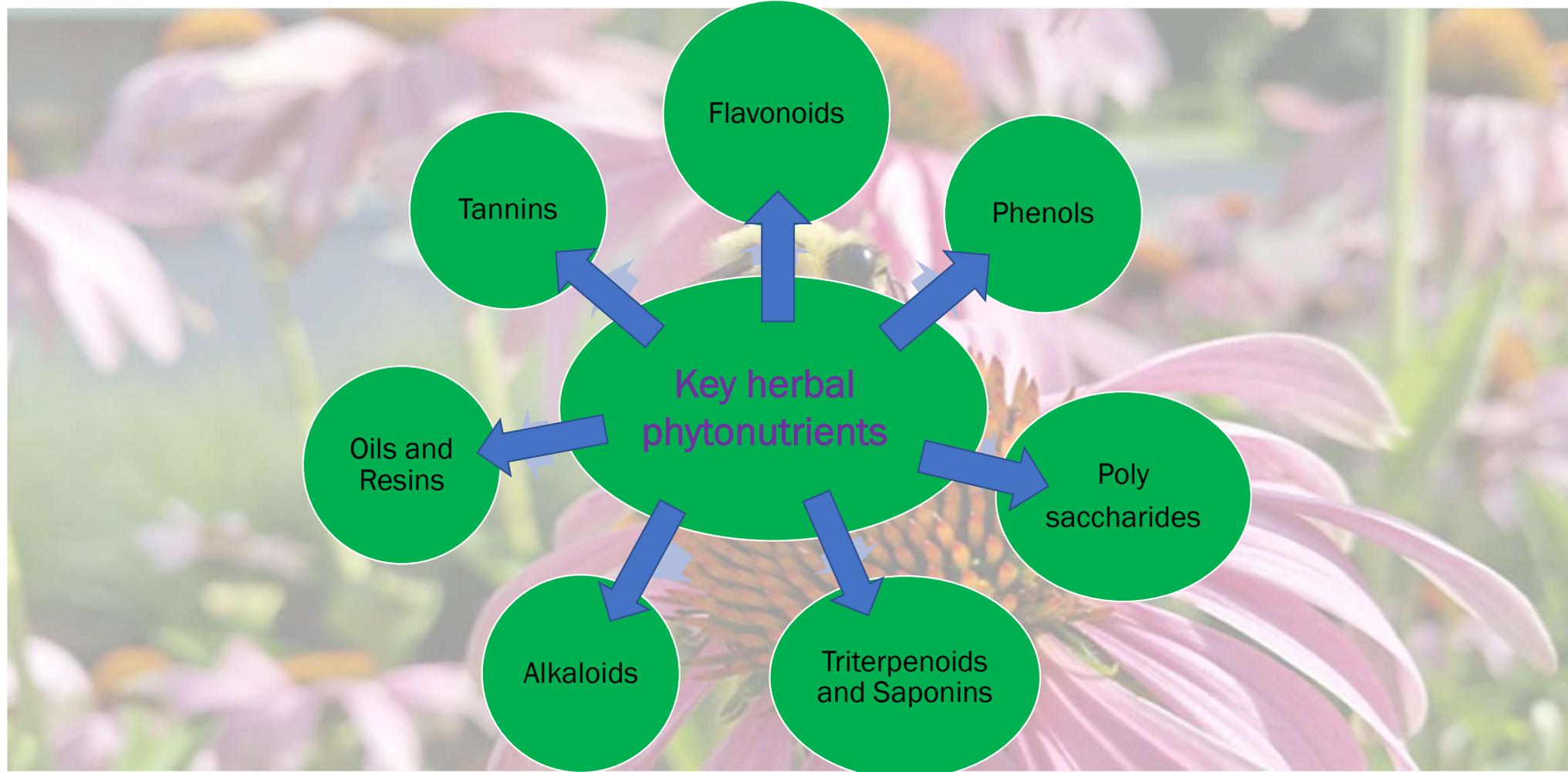
Tinctures ( alcohol extract), Infusions and decoctions (water extract), Infused oils, Creams, Capsules, Powders, Ointments and Syrups

As **Simples** (one herb) or **Formulas** ( combined together)

Plant phytonutrients vary in their bioavailability, extraction and solubility in water, alcohol and lipids

Knowing the best form of extraction for a herb and their phytochemicals is key to their effective use





# Polyphenols

Key antioxidant, anti-inflammatory plant compounds

Rich sources are **sage, rosemary, oregano, cinnamon, ginger and thyme.**

Have action on the **Gut Microbiome** - Polyphenols can act as **prebiotics** which influence the gut microbiota

Double blind trial investigated effect of proanthocyanidin cranberries on *H. pylori* suppression in 522 adults.

Results showed that 44 mg of proanthocyanidin-standardized cranberry juice administered twice daily for 8 weeks resulted in the highest *H. pylori* suppression rate.

Conclusion: **Cranberries**, being naturally rich in phenolic acids and **proanthocyanidins**, may reshape the gut microbiome by improving *Akkermansia muciniphila* growth and stimulating gut mucus production, which reduces gut permeability.



# Flavonoids

## Abundant and key plant phytochemicals

Key groups are flavones, flavonols, isoflavones, and anthocyanins

### Key actions:

#### 1. Anti-inflammatory –

Quercetin (flavonol) – from nettle, ginkgo and *Scut baicelensis* -inhibits histamine release from basophils and mast cells

Baicalein (flavone)– from *Scut baicelensis* - binds inflammatory cytokines IL-1 $\beta$ , -6, and TNF-

#### 2. Strengthen capillary structure and cardiovascular system -

Rutin (flavonoid glycoside) from buckwheat

#### 3. Antioxidant – anti-lipid peroxidation activity.

Silymarin (flavonolignan) – from Milk thistle



## Polysaccharides

**Key actions: Soothing and healing**

Many have prebiotic properties

**Mucilage, Gums and Beta glucans**

Mucilage - Slippery Elm powder, Psyllium seed/ husk,  
Marshmallow leaf/ root

Carrageenan – Irish Moss ( in Gaviscon)

**Immunomodulating polysaccharides**

Key phytonutrient is beta glucan which has an  
immunomodulating action

Found in Medicinal Mushrooms such as Reishi,  
Maitake, Shiitake, Chaga and Astragalus.



Marshmallow

# Terpenoids and Saponins

Vulnerary/ Healing in wounds – *Calendula officinalis*

Strengthen blood vessel walls – Horsechestnut/  
Butchers broom

Phytosterols – Beta –sitosterols – $5\alpha$ -reductase inhibitor used in BPH; can help lower LDL cholesterol

Triterpenoid saponins – have steroidal like actions ie Glycyrrhizin in Licorice; Diosgenin in Wild Yam. Found in many adaptogenic herbs – Korean Ginseng, Siberian Ginseng



Licorice

# Oils and Resins

Key actions – antimicrobial, bitters and anti-inflammatory

Volatile oils – bind to nerve receptors in nose and nasal cavity – have direct effect on the limbic system influencing mood and emotions as well as often being antimicrobial and anti-inflammatory.

Allyl isothiocyanates – found in brassicas – Allyl sulphide in garlic – Alliin – which releases the active Allicin when garlic is crushed.

Resins – solid and water insoluble. Myrrh, Boswellia and Ginger – anti-inflammatory, antifungal and antimicrobial.



Boswellia

# Alkaloids

Strong effects in the body, particular on the nervous system. Often isolated to create medicinal drugs

Caffeine and Berberine are the most common

Berberine – found in Goldenseal, *Berberis* spp, Chinese Goldthread – cholagogue, hepatoprotective, antibacterial, antifungal, anti-inflammatory, hypoglycaemic, antitumour, antiparasitic

Alkaloids can be toxic and strongly medicinal in action. Often found in restricted or controlled herbal medicines



Goldenseal



Ashwaganda

## Some key plant actions:

- Adaptogenic
- Bitter
- Anti – inflammatory
- Anti-microbial
- Nervine
- Nootrophic



## Adaptogenic herbs

The term adaptogen was introduced by Russian toxicologist Nikolay Lazarev in 1957 to refer to 'substances that increase the state of non-specific resistance' in stress.

Broadly, an adaptogen must have the four 'Ns'.

**Nourishing** - bring nutritive strength.

**Normalising** - raise what is low and lower what is high (eg energy, stress).

**Non-specific** - act on multiple parts of the body at the same time.

**Non-toxic** - be completely safe when used over extended periods of time.



## Key adaptogenic herbs:

**Ashwaganda**  
**Siberian Ginseng**  
**Rhodiola**  
**Panax ginseng**  
**Schisandra**  
**Tulsi**

Schisandra berries



# How do adaptogenic herbs work?

## Effect on the HPA axis

Studies on animals and isolated neuronal cells show that adaptogens exhibit neuroprotective, anti-fatigue, antidepressive, anxiolytic, nootropic and CNS stimulating activity.

Clinical trials demonstrate an **anti-fatigue effect** that increases mental work capacity against a background of stress and fatigue, particularly in tolerance to mental exhaustion and enhanced attention.

The stress-protective activity of adaptogens is associated with **regulation of homeostasis via several mechanisms of action, which are linked with the hypothalamic-pituitary-adrenal axis and the regulation of key mediators of stress response**, such as molecular chaperons (e.g., HSP70), stress-activated c-Jun N-terminal protein kinase 1 (JNK1), cortisol and nitric oxide.



# Bitters

The herbal 'bitter principle' works by triggering a sensory response in the mouth and stimulating digestive function

- Bitter constituents stimulate digestive enzymes, bile & HCL production
- They can increase absorption of fat- soluble vitamins A, D, E, K
- Stimulate appetite
- Reduce gas production
- Improve nutrition





Yarrow

## Key bitter herbs:

**Wormwood**

**Gentian**

**Yarrow**

**Barberry**

**Goldenseal**

**Chamomille**

**Dandelion**



# Anti- inflammatory Action

Herbs rich in resins, salicylates, steroidal saponins, volatile oils and flavonoids

Herbs often show NF-kB; COX-1, COX-2 and 5- LOX inhibition

Examples are: Meadowsweet, Willow bark, Ginger, Boswellia, Calendula, Licorice, Chamomille, Turmeric

Some herbs have an **affinity for particular organs or tissues** in the body and will direct their anti-inflammatory action ie Devil's claw and musculoskeletal system

Other herbs have a more **systemic anti-inflammatory** action in the body ie Turmeric, Boswellia

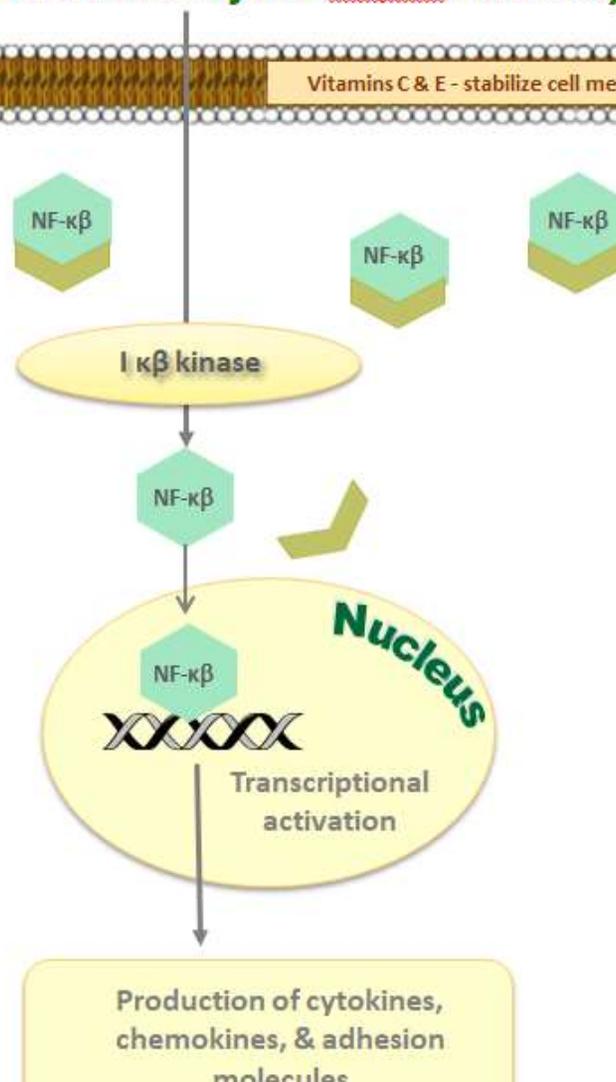


## Botanical & Nutrient Modulation of the $\text{NF-}\kappa\text{B}$ Pathway

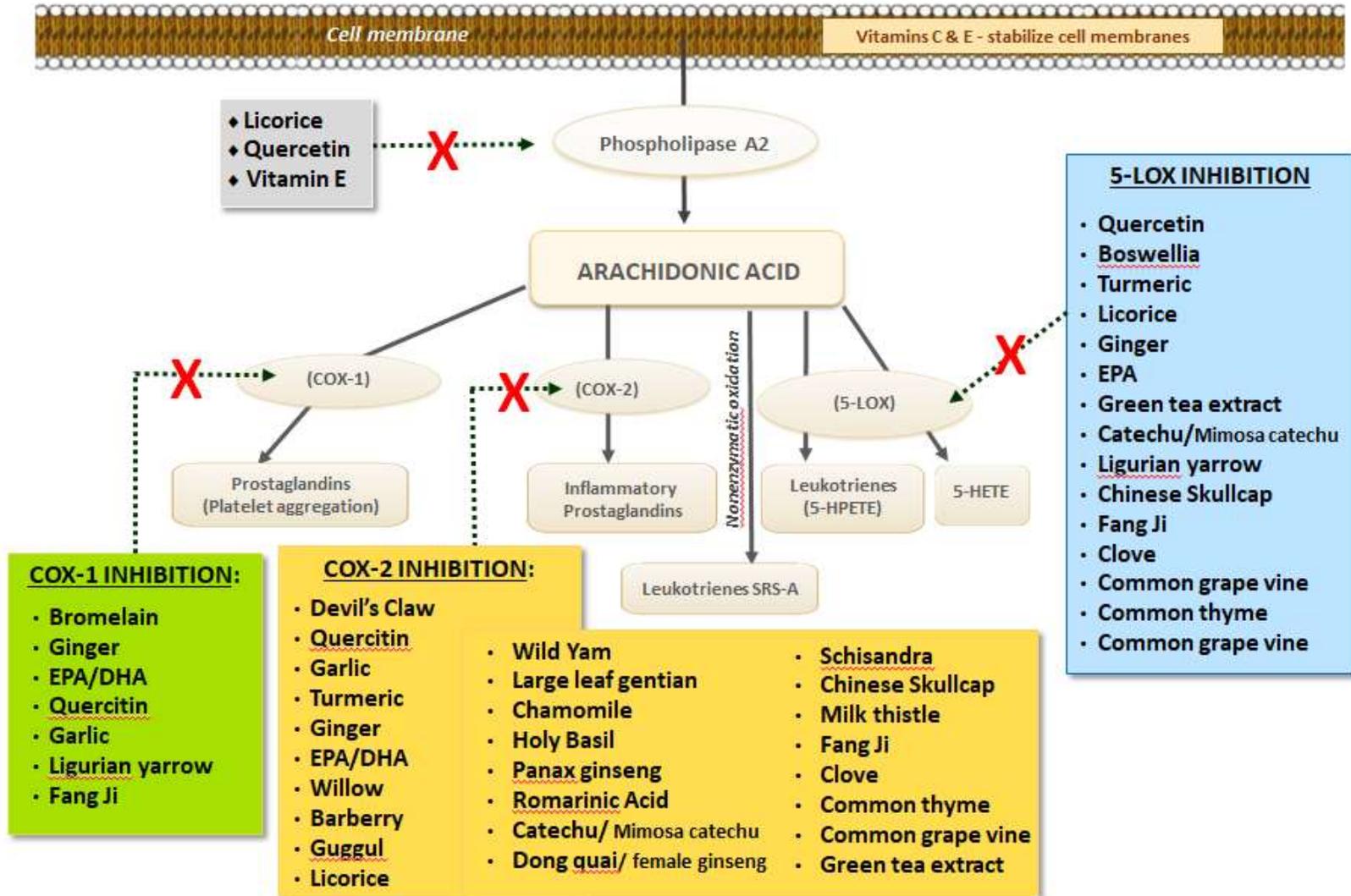


### NF- $\kappa$ B INHIBITION

- ♦ Ginger
- ♦ Garlic
- ♦ Turmeric
- ♦ Devil's claw
- ♦ Romarinic Acid
- ♦ Ashwaganha
- ♦ Willow
- ♦ Andrographis
- ♦ Dong quai/female ginseng
- ♦ Burdock
- ♦ Barberry
- ♦ Guggul/Indian bdellium tree
- ♦ Qiang Huo
- ♦ Holy Basil
- ♦ Schisandra
- ♦ Chinese Skullcap
- ♦ Milk thistle
- ♦ Clove
- ♦ Feverfew
- ♦ Common thyme
- ♦ Common grape vine
- ♦ Catechu/Mimosa catechu



## Botanical & Nutrient Modulation of the Arachidonic Cascade



# Anti-microbials

Often rich in volatile oils or resins, examples are:

Garlic  
Thyme  
Wild Indigo  
Goldenseal  
Echinacea  
Myrrh

Echinacea



# Nervines

Have a beneficial effect upon the nervous system-

- **Nervine Tonics** (or trophorestoratives) are nourishing to the nervous system, strengthening & “feeding” it. They can be helpful in stress, anxiety and burnout ie. Green Oat Tops, Brahmi, Gota kola, St John’s Wort and Vervain.
- **Nervine Relaxants** have a calming effect and are often antispasmodic, ie Lavender, Hops, Lemon balm, Chamomille, Skullcap, Passionflower, Limeflower, Wild Lettuce.



Chamomille



# Nootropic

Nootropic herbs support mental performance, such as cognition and memory, and can be useful in ADHD

**Ashwaganda** - has been well studied and human trials have shown it to have beneficial effects on cognitive function, memory, focus and attention.

**Lemon Balm** - rich in rosmarinic acid, has neuroprotective and antioxidant effects in the brain as well as helping to increase blood flow.

**Gingko** - studies show gingko to have an antioxidant effect on the brain, and it may help with memory impairment and poor concentration and increasing blood flow to the brain.



Gingko



# CASE STUDIES

Urinary Tract Infections  
Childhood Eczema



# Case study 1

55 year old female

## PC – Recurrent urine infections

Recurrent urine/ bladder infections worse for last 4 years

Treated with recurrent antibiotics. As soon as she stops antibiotics all symptoms return

UTI's first started when she was in her early 20s. Along with **thrush** due to recurrent antibiotics.

Family stress ++ and history of low mood

## Herbal tincture prescription :

Echinacea, Astragalus, Marshmallow root, St John's Wort, Skullcap, Pellitory of the Wall, Couchgrass and Damiana.

Dose: 5ml tds.



**Herbal Infusion:** Corn silk, Buchu, Calendula, Cleavers and Mullein  
Dose : 4-6 cups/ day

Ulmus fulva (Slippery elm ) - 2 capsules prn

First follow-up (3 weeks)

No burning / pain. Frequency has improved.

No antibiotics since last visit. Having vaginal dryness – painful sex.

**Vaginal cream prescribed:**

Rx Chickweed cream, Marshmallow root, Chamomille glycerite, Wild Yam tincture.

Apply as needed.



Outcome –  
1 x UTI in 18 months and no antibiotics required.

Maintained on herbal tincture prescription of:

Echinacea, Astragalus, Marshmallow root, St John's Wort,  
Skullcap, Goldenrod, Couchgrass and Damiana, Cornsilk and  
Calendula  
Dose: 5ml tds



## Case Study 2

8/12 old baby

PC – eczema - started at age 2 weeks, now all over body.

Red, burning, itchy, angry

Using hydrocortisone 1 % cream all over body once a day

Digestion – Hx of gastric reflux, some constipation.

### Treatment plan:

Diet –increase homemade food, add omega oils into diet.

### **Herbal tincture prescription:**

Chamomille glycerite, Dandelion root, Licorice, Heartsease, Nettle, Cleavers and Rose syrup.

Dose: 2ml bd



## Herbal Cream:

Chickweed cream, aloe vera gel, hemp seed oil, turmeric powder, chamomille aromatic water.

Dose: Gradually replace steroid cream with herbal cream.

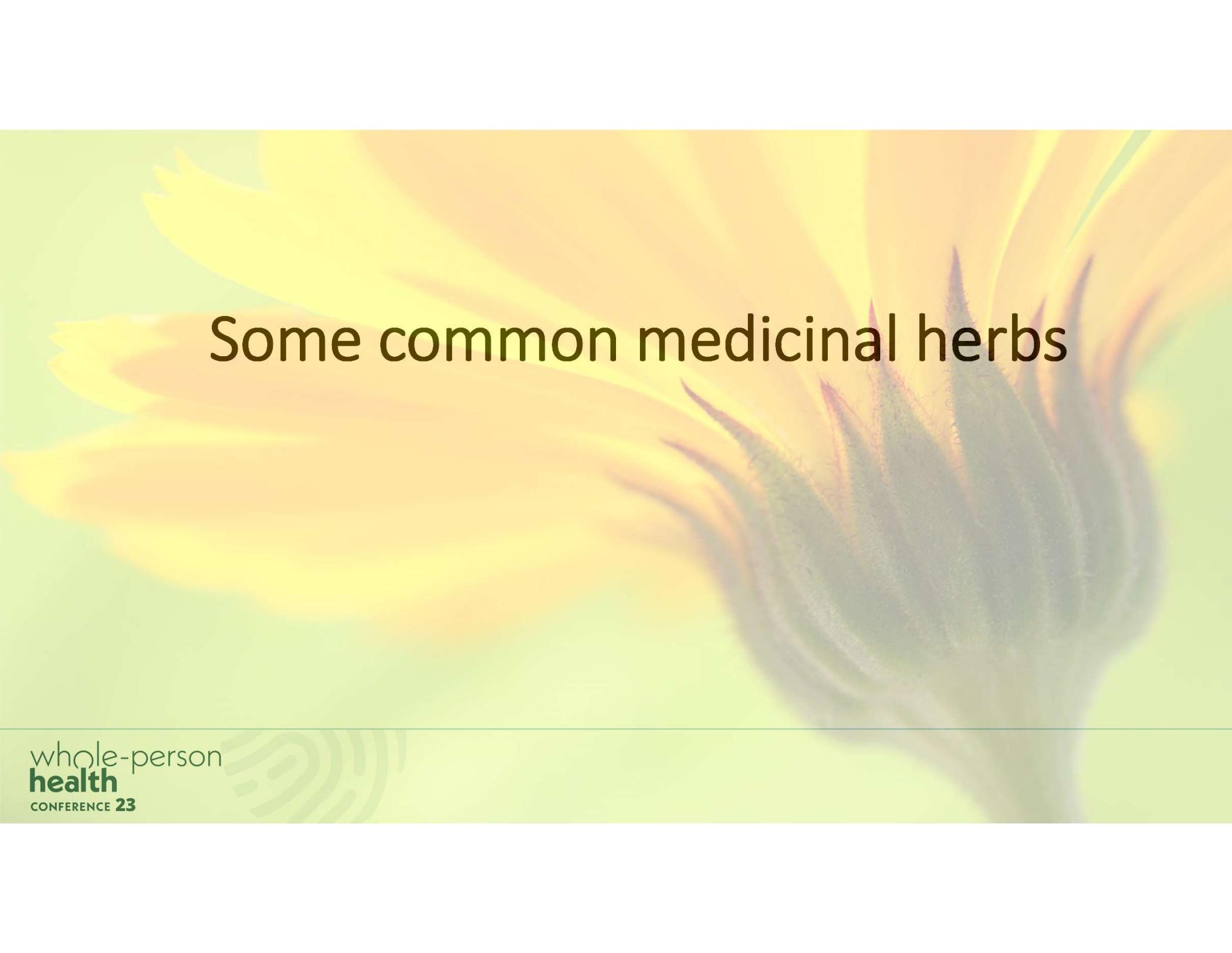
## Outcome:

Gradual improvement over 3-4 months and steroid cream stopped.

At 5 months skin was clear.

Several new patches appeared when medicine was stopped, so a maintenance dose of 2ml od was continued for next 4 months, then successfully weaned off.





# Some common medicinal herbs

# Licorice

- Traditional use for soothing inflamed and irritated mucous membranes in the digestive tract. Flavonoids in licorice may also inhibit growth of *H. pylori*.
- Licorice may protect the stomach and duodenum by increasing production of mucin
- DGL licorice is very useful in gastritis, heartburn, GORD and constipation.
- To avoid potential side effects, such as hypertension and fluid retention, deglycyrrhizinated licorice (DGL) is preferred.



# Slippery elm

- Native Americans used slippery elm in healing salves for wounds, boils, ulcers and diarrhoea.
- Rich in mucilage, which becomes a thick gel when mixed with water. It coats and soothes the mouth, throat, stomach, and intestines and is a prebiotic.

Often used in:

- Sore throats
- Coughs
- Gastroesophageal reflux disease (GORD)
- Crohn's disease, Ulcerative colitis, and Irritable bowel syndrome (IBS)
- Diarrhoea



**Prebiotic Potential of Herbal Medicines Used in Digestive Health and Disease. Peterson CT et al. J Altern Complement Med 2018 Jul;24(7):656-665. doi: 10.1089/acm.2017.0422. Epub 2018 Mar 22.**

To investigate the prebiotic potential of herbal medicines.

### **RESULTS:**

Profiling of cultures supplemented with **Glycyrrhiza glabra, Ulmus rubra, or Triphala formulation** by 16S rDNA sequencing revealed profound changes in diverse taxa in human gut microbiota. Principal coordinate analysis highlights that each herbal medicine drives the formation of unique microbial communities. The relative abundance of approximately one-third of the 299 species profiled was altered by all 3 medicines, whereas additional species displayed herb-specific alterations.

**Herb supplementation increased the abundance of many bacteria known to promote human health, including Bifidobacterium spp., Lactobacillus spp., and Bacteroides spp.**

Herb supplementation resulted in the reduced relative abundance of many species, including potential pathogens such as *Citrobacter freundii* and *Klebsiella pneumoniae*.

**Herbal medicines induced increase of butyrate- and propionate-producing species. U. rubra and Triphala significantly increased the relative abundance of butyrate-producing bacteria, whereas G. glabra induced the largest increase in propionate-producing species.**

### **DISCUSSION:**

These studies are novel in highlighting the significant **prebiotic potential of medicinal herbs** and suggest that the health benefits of these herbs are due, at least in part, to their ability to **modulate the gut microbiota** in a manner predicted to **improve colonic epithelium function, reduce inflammation**, and protect from opportunistic infection. Forthcoming studies in human clinical trials will test the concordance of the results generated in vitro and the predictions made by genome analyses.

A photograph of turmeric rhizomes and powder. In the foreground, a wooden spoon is filled with bright yellow turmeric powder, which is also spilled onto a dark, textured wooden surface. In the background, several pieces of turmeric rhizome are shown, some whole and some sliced into rounds, revealing their characteristic orange-yellow interior. The lighting is soft, highlighting the texture of the rhizomes and the fine particles of the powder.

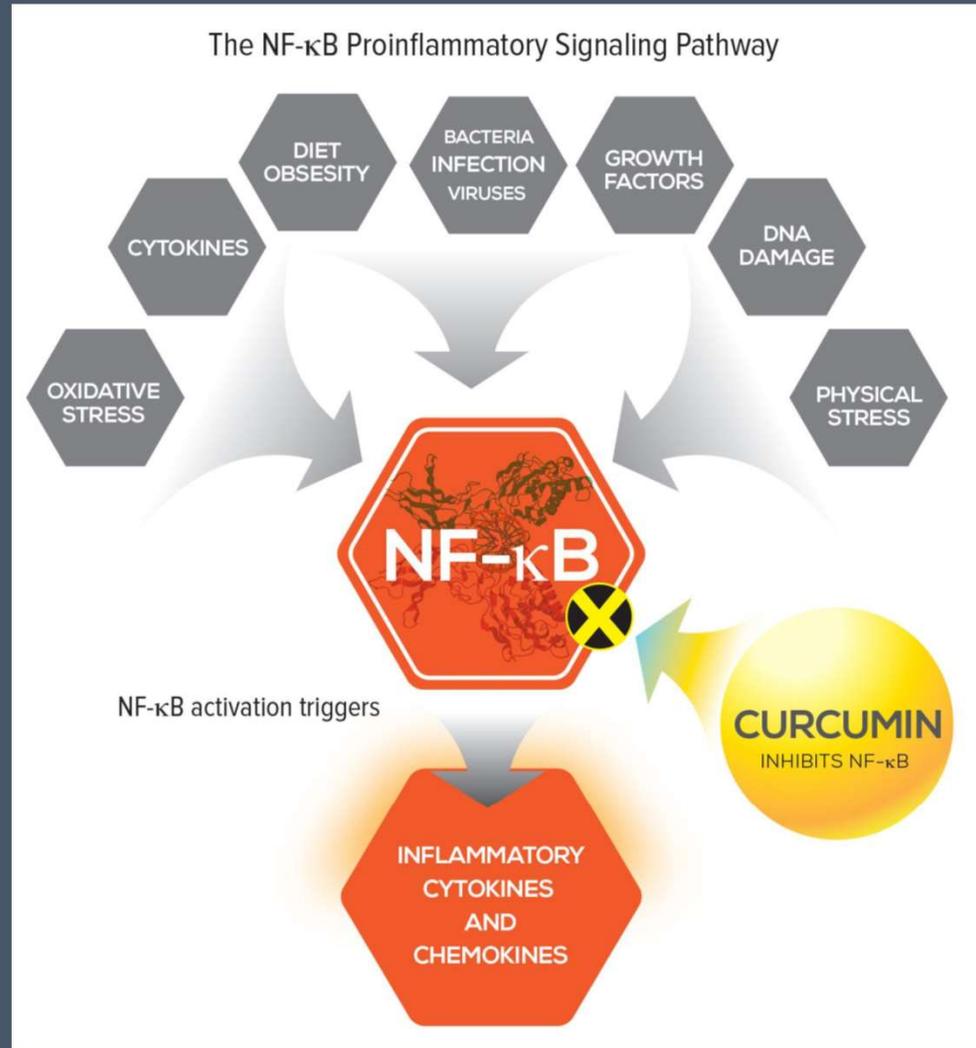
## Curcuma longa (Turmeric)

Part used: rhizome

Turmeric is a well researched and widely used herbal medicine.

Used traditionally as an anti-inflammatory, liver detoxificant, digestive, antibacterial, to lower cholesterol, as an antioxidant and prebiotic.

# Curcumin: Anti-inflammatory Mechanism of Action



- A wide variety of cellular properties of curcumin have been demonstrated, including antioxidant, anti-inflammatory, anti-proliferative, pro-apoptotic, anti-bacterial and anti-cancer activities.
- The anti-inflammatory targets of curcumin including reduction of NF- $\kappa$ B, COX2 and pro-inflammatory cytokines such as IL-1, IL-6 and TNF- $\alpha$ .



## Comparison with NSAIDs

In 2014, Kuptniratsaikul et al. compared the effectiveness of curcumin with ibuprofen.

*A total of 367 patients with knee osteoarthritis were split into two groups: one received 1200 mg daily ibuprofen while the other received 1500 mg daily of curcumin for a duration of 4 weeks.*

*Both treatment groups exhibited significant improvement in clinical parameters of WOMAC pain and function scores.*

*However, there was a significantly higher number of patients with abdominal pain in the ibuprofen group.*

*Findings from this study indicate that use of curcumin supplementation for OA is as effective as ibuprofen (NSAIDs).*



# Zingiber officinalis (Ginger)

Long traditional use as an anti-inflammatory, anti-emetic, circulatory stimulant and digestive.

Commonly used in arthritis, IBS, nausea and dysmenorrhoea.

It **reduces inflammation** at multiple levels of the inflammatory cascade, on **prostaglandin synthesis** through inhibition of COX-1; COX-2 and 5-lipoxygenase enzymes and inhibits macrophage activation, IL-12, TNF-alpha, IL-1beta and MCP-1.

Ginger extract has been shown to inhibit the activation of tumor necrosis factor  $\alpha$  and cyclooxygenase-2 expression during in vitro studies.



# Calendula officinalis

Used topically to increase wound healing, reduce topical inflammation and infection.

Commonly used as a cream for wounds, burns and skin inflammation.

Has been shown to inhibit the activity of lipoxygenase in vitro; and suppresses leukotriene infiltration in animal studies.

*A RCT involving 72 primiparous females with surgical childbirth studied the impact of calendula on caesarean wound healing. According to the results, using calendula ointment considerably increases the speed of caesarean wound healing.*

Jahdi F et al. The impact of calendula ointment on cesarean wound healing: A randomized controlled clinical trial. J Family Med Prim Care. 2018 Sep-Oct;7(5):893-897. doi: 10.4103/jfmpc.jfmpc\_121\_17. PMID: 30598929; PMCID: PMC6259546.



## Vitex agnus castus



Traditionally used for PMT and menstrual cycle hormone balancing.

Acting on the pituitary gland, it is thought to have progesterogenic properties.

*Randomised, double blind, placebo controlled, parallel group comparison over three menstrual cycle showed it to be an effective and well tolerated treatment for the relief of symptoms of the premenstrual syndrome.*

Treatment for premenstrual syndrome with Agnus castus fruit extract: prospective, randomised, placebo controlled study. Schellenberg R, BMJ 2001 Jan 20;322(7279):134-7.





## Valerian

Nervous system relaxant, hypnotic, anxiolytic, analgesic, sedative, antispasmodic.

Commonly used in insomnia and anxiety

Valerenic acid and its derivatives are sedative and antispasmodic. They bind GABA receptors, release GABA and inhibit GABA degradation causing CNS sedation and smooth & skeletal muscle relaxation.

Iridoid valepotriates are sedative and antispasmodic.

# Hawthorn

The medicinal use of hawthorn in cardiovascular disease is prevalent in most cultures. It is one of the most popular herbal medicines for the cardiovascular system.

The flavonoids, anthocyanidins and proanthocyanidins, as well as condensed polyphenolic tannins (PCOs) have anti-inflammatory, anti-oxidant, and protective cardiac effects.

They also have a stabilizing effect on capillaries, and reduce vascular permeability and fragility.



A meta-analysis of studies using hawthorn for chronic cardiac failure showed it was significantly more beneficial than placebo for maximal workload. Symptoms of dyspnea and fatigue also decreased significantly with hawthorn compared with placebo.

In 1996, a systematic review of 7 controlled trials demonstrated clinical improvement with hawthorn extract; there were decreases in symptoms and objective evidence of efficacy in NYHA class I or II heart failure criteria.

Dahmer, S, Scott, E. Health Effects of Hawthorn. *Am Fam Physician*. 2010 Feb 15;81(4):465-468.

# Using herbal medicine safely:

## Combining herbal medicine with conventional care

Some herbs may interact with conventional drugs - it is important to always check for herb-drug interactions.

For example: St. John's wort (*Hypericum perforatum*) effects the CYP450 liver enzyme pathway and interacts with many drugs including warfarin, digoxin, cyclosporin, protease inhibitors for HIV, OCPs, SSRIs and amitriptyline.

Licorice can cause hypertension, and therefore should be avoided in patients with high blood pressure.

Garlic, Ginkgo, Chinese angelica, Turmeric and Ginger may increase the risk of bleeding, and so are contraindicated with anticoagulants and before surgery.



**Be cautious and seek professional guidance on doses and suitability for:**

Elderly and pregnant patients and those with cancer, heart, liver or kidney disease, organ donor recipients, patients with coagulation disorders, and those on potassium – sparing diuretics and long term laxatives.

Take drugs and herbs at different times in the day (preferably at least 1 hour apart)

Monitor regularly

Seek expert advice from a professionally trained herbalist for complex conditions or where there is polypharmacy.



A person wearing a red shirt is seen from behind, working in a field of green plants. The person appears to be tending to the plants, possibly weeding or harvesting. The background is a vast field of similar green plants under a bright sky.

# Quality

**Over the counter (OTC) herbal products are unregulated**

**Quality varies greatly between suppliers and some OTC herbal products have been found to contain very little active ingredients or may be adulterated.**

**Products which are recommended should be made under GMP (Good Manufacturing Practice), a quality assurance scheme which covers strict regulations on quality, traceability and contamination,**

**This will ensure that the correct species and variety of plant is used, harvesting and storage is optimum, and the product contains no contaminants (including heavy metals and pesticides).**

**Also look for Organic and FairWild certification and ensure any herbs are harvested ethically and sustainably wherever possible.**

# Key tips for introducing herbs into an IM approach

 Start by using simples or herbal teas/infusions

 Start by using herbs for simple and minor ailments

 Always check for herb-drug interactions

 Always check for professional quality and ethical harvesting

 Refer to a qualified herbalist for complex conditions



A soft-focus photograph of a lavender field under a bright sky. The lavender plants are in the foreground and middle ground, with their purple flowers and green stems clearly visible. The background is a blurred expanse of more lavender plants and a pale blue sky.

**Any Questions ?**

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