

HERBAL APPROACHES IN THE MANAGEMENT OF CANCER

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INTRODUCTION – Important areas for consideration

- Herbs that **prevent** cancer
- Herbs that **stop** the growth of cancer
- Adjunct therapy and management of cancer (supportive role of the herbalist)
- Herbal management of the physical and psychological SE of cancer treatment
- Palliative care and pain relief

PHYTOTHERAPEUTICS AND CANCER – Part I

- Herbal and dietary interventions in the treatment of cancer
- Adjunct therapy to conventional treatment approaches
- Management of SE of conventional treatments (radiotherapy & chemotherapy)
- Patient management
 - Psychological
 - Emotional
 - Reassurance/information
 - Referral for counselling
 - Physical (alleviation of toxic & damaging effects of chemotherapy)
- Supportive treatment – working alongside conventional & other treatments as part of a broader range of approaches that will help to:-
 - a) alleviate the profoundly toxic and damaging effects of chemotherapy (which can be worse than the untreated cancer itself, especially in the elderly)
 - b) support the body's capacity to counter malignancy
 - c) help the patient in maintaining a positive and focused emotional state

It is advisable that cancer patients start supportive treatment with dietary measures that include:-

- fruit especially citrus & grapes
- vegetables especially onion, cabbage, umbelliferous plants (eg. celery, parsley, fennel, caraway)
- vegetables from the nightshade/solanacea family(eg. potato, chilli)
- supplements of garlic, green tea
- tendency to constipation - flaxseed/linseed (bulking agents that's also high in EFA esp. omega 3 FA)

All the above recommendations cannot account for individual differences so they will remain as a guideline. In addition to dietary interventions, the overwhelming instinct through history is to see cancer as an indication for cleansing. The treatment rationale for this has included strict/radical dietary regimens eg. raw food diet, grain & fruit only diet, grape-only diet.

Herbs that are often chosen for their cleansing/purifying action in cancer management include the following:-

- *Arctium lappa* (burdock)
- *Calendula officinalis* (marigold)
- *Gallium aparine* (cleavers)
- *Phytolacca decandra* (poke root)
- *Rumex crispus* (yellow dock)
- *Taraxacum officinale* (dandelion)
- *Thuja occidentalis* (tree of life/arbor vitae)
- *Trifolium pratense* (red clover)
- *Urtica dioica* (nettle root)
- *Viola tricolour* (heartsease)

Laxatives and cholagogues are often applied where indicated.

Other useful herbs include:

- *Zingiber officinale* (ginger)
- *Glycyrrhiza glabra* (licorice)
- Extract of *Viscum album* (mistletoe) as a non-toxic stimulant of endogenous defences. There are many published studies on this but no substantial controlled clinical trials. Nevertheless, it is widely used as an adjunct to other therapy and has strong professional support.

Caution: Contraindications

In breast cancer, or other oestrogen-dependent cancers, the use of plant remedies must be viewed with caution especially if the patient is taking Tamoxifen[®]. Herbs such as *Trifolium pratense* (red clover) and *Medicago sativa* (alfalfa) have non-triterpenoid (non-steroidal) oestrogenic activity and should be safe to consume. Similarly, prostate cancer is hormonally led and herbs with androgenic (testosteronic) potential are strictly contraindicated.

PHYTOTHERAPEUTICS AND CANCER – Part II

- A) Herbalists' Perspective** - Building natural defences (which are weakened in cancer onset)
- B) Treatment Rationale** - To control the cancer without weakening the patient.
Examine:
- Diet/ Nutritional status
 - Emotional aspects in the patient
 - Psychological aspects in the patient
 - Stress
 - Resistance to infection/ Immunity
- To help the body heal itself and fight/ resist disease (cancer) by itself
- Adjunct therapy (on the basis that cancer is not only a local lesion but a reduction in the body's resistance being the primary cause)

- C) Main therapeutic actions of HM**
- Boosting vitality
 - Immune support
 - Liver support
 - ↓ inflammation

D) Additional benefits of herbal supplementation

- ↓ toxic effects of chemotherapy & radiotherapy treatments
- ↓ SE of chemotherapy & radiotherapy
- ↑ sensitivity of conventional treatments for cancer (chemotherapy & radiotherapy)

E) Major considerations in treating a cancer patient

Strengthen body resistance & enhance vitality

- *Panax ginseng* (Korean ginseng)
- *Withania somnifera* (Indian ginseng or Ashwagandha)
- *Astragalus membranaceus* (Astragalus)
- *Eleutherococcus senticosus* (Siberian ginseng)

Immune-enhancing therapy

- *Echinacea purpurea* (Echinacea)
- *Astragalus membranaceus* (Astragalus)
- *Withania somnifera*
- *Eleutherococcus senticosus*
- *Tabebuia impetiginosa* (Pau d'arco)
- Shitake (*Lentinula edodes*) & Reishi (*Ganoderma lucidum*) mushrooms
- *Aloe vera* (aloe)

Removal of blood-stasis & lymphatic drainage

- *Salvia miltorrhiza* (dan shen)
- *Angelica sinensis* (dong quai)
- *Phytolacca decandra* (poke root)
- *Calendula officinalis* (marigold)

Detoxification Therapy

- *Taraxacum officinalis* root (dandelion)
- *Rumex crispus* (yellow dock)
- *Scrophularia nodosa* (figwort)
- *Phytolacca decandra* (poke root)
- *Iris versicolour* (blue flag)
- *Arctium lappa* (burdock)
- *Viola tricolour* (heartsease)
- *Trifolium pratense* (red clover)

Anti-Inflammatory Therapy

- *Glycyrrhiza glabra* (licorice)
- *Panax ginseng* (Chinese/Korean ginseng)
- *Eleutherococcus senticosus* (Siberian ginseng)
- *Rehmannia glutinosa* (Rehmannia)
- *Bupluerum falcatum* (hare's ear)
- *Ginkgo biloba* (ginkgo)
- *Boswellia serrata* (sallakee – closely related to frankincense)

Antioxidant Herbs

- Various red-berried fruits & those high in **flavonoids** eg. *Vaccinium myrtillus* (bilberry), *Crataegus spp* (hawthorn), *Ginkgo biloba* (ginkgo)
- Grape seed extract
- *Astragalus membranaceus* (Astragalus)
- *Rosmarinus officinalis* (rosemary)

Liver detoxification

- Importance of Phase I and Phase II metabolism
- *Silybum marianum/Carduus marianus* (milk thistle)
- *Curcuma longa* (turmeric)
- *Schisandra chinensis* (Schisandra)
- The Brassicas (broccoli, cabbage, horse radish, brussel sprouts...)
- *Allium sativum* (garlic)
- *Rosmarinus officinalis* (rosemary)
- *Salvia officinalis* (sage)
- Parsley Leaf Oil (*Petroselinum crispum*)
- Citrus Fruit Oil
- Green Tea (*Camellia sinensis*)
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Stress and Psychoneuroimmunology (PNI)

- Always consider mind-body link
- Treatment rationale based within a holistic context/ framework

- *Hypericum perforatum* (St. John’s Wort) – depression, anxiety, antiviral, anti-inflammatory
- *Withania somnifera* (Indian ginseng/ Aswagandha) – adaptogenic, nervine tonic, relaxant, mildly sedating
- *Valeriana officinalis* (Valerian) – anxiolytic, relaxant, antispasmodic

Other points for consideration:

- 1) Using antiplatelet herbs eg. garlic, ginger, ginkgo, turmeric
- 2) Improving immune function eg. Astragalus, Siberian or Korean ginseng
- 3) Coumarins eg. red clover
- 4) Using angiogenesis inhibitors eg. possibly genistein in soy & other herbs

ORGAN-SPECIFIC APPROACH	SYMPTOMATIC APPROACH
<p>Depending on the site of the tumour or body systems under stress, we need to support the normal cells, diminish their damage and create an environment for cancer cells to be regulated</p> <ul style="list-style-type: none"> • Liver – <i>Silybum marianum</i> (milk thistle) • Mucous membranes – <i>Hydrastis canadensis</i> (goldenseal) • Connective tissue restorative – <i>Centella asiatica</i> (centella) • Kidney/Adrenal Support – <i>Rehmannia glutinosa</i> (Rehmannia) • Brain – <i>Bacopa monniera</i> (bacopa) • Circulation – <i>Ginkgo biloba</i> • Breast – <i>Phytolacca decandra</i> (poke root) • Exocrine Pancreas – <i>Gymnema sylvestre</i> (gymnema), bitter herbs (<i>Artemisia absinthum</i>) 	<p>Pain – <i>Corydalis soldida</i> (corydalis), <i>Viburnum opulus</i> (cramp bark), <i>Valeriana officinalis</i> (valerian)</p> <p>Nausea – <i>Zingiber officinale</i> (ginger), <i>Chamomilla recutita</i> (chamomile), <i>Mentha x piperita</i> (mint)</p> <p>Constipation – <i>Rhamnus purshina</i> (cascara), <i>Cassia senna</i> (senna)</p> <p>Diarrhoea – <i>Agromonia eupatoria</i> (agrimony), <i>Vaccinium myrtillus</i> (bilberry), <i>Quercus robur</i> (oak) & other herbs with a high tannin content</p> <p>Depression – <i>Hypericum perforatum</i>, <i>Turnera diffusa</i> (damiana), <i>Rosa damascena</i> (rosehips)</p> <p>Mouth Ulcers – Propolis (topically), <i>Centella asiatica</i>, <i>Hydrastis Canadensis</i></p>

Additional Points for Consideration in Management

- Dietary considerations (eg. ↓ fat, radical diets)
- Antioxidant vitamins (Vitamins A, C and E) plus Se
- Soy (xref. information sheet on phytoestrogens)
- Herbal intervention (especially as adjunct therapy)
- Other natural products (eg. PC-SPES)
- Acupuncture (esp. in pain management)
- Massage
- Exercise

- Psychological intervention (counselling, support)
- Mind-body interventions (PNI)
- Concept of Integrative Medicine

Anti-cancer herbs of likely benefit

1. *Silybum marianum* (milk thistle) – hepatoprotective
2. *Eleutherococcus senticosus* – adaptogenic, immune stimulant, cancer protective, ↓ radiation damage to healthy cells & tissues
3. Aloe Vera gel – internally & externally protective
4. Astragalus & Echinacea – supports WBC counts, helps ↓ opportunistic infections
5. Schisandra – hepatoprotective, adaptogenic, nervine

Therapeutic agents in the biotransformation of toxins

Schisandra chinensis

- ↑ glutathione status ie. induces GST activity
- Schisandrin B - ↑ microsomal cytochrome P₄₅₀ enzymes
 - ↑ GST activity
- Gomasin A - ↑ bile acid synthesis & metabolism
 - stimulates liver regeneration
 - ↑ GST activity

Curcuma longa

- Chemopreventive of carcinogenesis (alters the activation/detoxification of carcinogen metabolism)

Silybum marianum

- Protects intact hepatocytes (liver cells) that have not yet been irreversibly damaged by preventing the entry of toxins through their cell membranes (acts on the cell membranes themselves)
- Stimulates protein synthesis thereby accelerating the process of hepatocyte regeneration and production of new cells

Culinary Herbs and Foods

Rosemary and **Sage** contain CARNOSOL which has antioxidant properties ie. it induces important Phase II enzymes (GST and NADPH-quinone reductase)

Garlic - chemoprotective against carcinogenesis

- induces Phase I and Phase II liver activity (biotransformation)

Parsley leaf oil contains MYRISTICIN which induces GST activity

Citrus fruit oil increases GST activity

- Green tea**
- contains POLYPHENOLS which are chemoprotective against carcinogenesis
 - ↑ Phase I and Phase II enzyme activity
 - blocks cigarette-induced ↑ in sister chromatid exchange (SCE) frequency. An ↑ in frequency indicates chromosomal/genetic damage which can result in abnormal cell proliferation & differentiation

The Brassicas eg. brussel sprouts, cabbage, broccoli, horse radish
Contain GLUCOSINOLATES (S-glycosides)

Upon cooking releases

ISOTHIOCYNATES
(contain sulphur)

- cancer-preventing properties
- anti-cancer properties
- ↑ GST (liver & small intestine) in ♂ only
- specifically protective against colon cancer

HERBAL SUPPORT IN CANCER TREATMENT

A variety of herbal remedies can offer much support during cancer treatment. Supportive therapy through herbal supplementation can address the often distressing, physical SE experienced from radiotherapy and chemotherapy. Additionally, psychological symptoms and the emotional aspects of patient care can be effectively treated with nervines, tonics and adaptogens.

Herbal supplementation may help to reduce much of the morbidity associated with cancer therapy since the poor selectivity of presently available anti-cancer drugs make it impossible to avoid some damage to healthy tissues, resulting in the common SE seen within clinical management.

Radiotherapy

Radiation “cooks cells” in much the same way that microwaves do – healthy cells can also be affected.

- To minimise radiation sickness and nausea
 - Fucus vesiculosus* (kelp) metabolises support & protection from tissue damage
 - Achillea millefolium* (yarrow) as a nervous system and circulatory tonic

- Thuja occidentalis* (arbour vitae/tree of life) as an anti-microbial to combat opportunistic infections
- Apples have valuable anti-radiation properties

- To control nausea
 - Zingiber officinale* (ginger)
 - Foeniculum vulgare* (fennel)
 - Taraxacum officinale* root (dandelion)

- Treatment of burning sensations internally & externally
 - Salvia officinalis* (sage) astringent properties
 - Symphytum officinale* (comfrey) as a vulnerary, demulcent & emollient
 - Caution: root is not for internal use**
 - Aloe vera* gel is soothing & cooling

- Support liver function
 - Silybum marianum* (milk thistle)
 - Taraxacum officinale* leaf & root (dandelion)

- Protection from stroke
 - Ginkgo biloba* (ginkgo)
 - Vinca major* (greater periwinkle)
 - Viscum album* (mistletoe)
 - Crataegus oxycanthoides* (hawthorn)

- Immune system support & cancer prevention
 - The ginsengs & *Hydrastis canadensis* (goldenseal) – general support
 - Aloes – bowel
 - Avena sativa* (oats) – small intestine
 - Echinacea purpurea* – lymph
 - Glycyrrhiza glabra* (licorice) – adrenal

Chemotherapy

- *Chamomilla recutita* (chamomile) – gut & nervous system
- *Silybum marianum* (milk thistle) – liver
- *Medicago sativa* (alfalfa) – gut
- *Rosa damascena* (rosehips) – kidney, liver, adrenals, nervous system (antioxidant, Fe, Vit C)
- *Thuja occidentalis* (arbour vitae) – antineoplastic, astringent, antimicrobial,
- *Petroselinum crispum* (parsley) – nutrient, Fe & other minerals, Vit C
- *Foeniculum vulgare* (fennel) – pancreatic tonic
- *Iris versicolor* (blue flag) – thyroid (metabolic regulator)
- *Zingiber officinale* (ginger) – metabolic tonic for toxic shock
- *Glycyrrhiza glabra* (licorice) – recovery after severe adrenal shock (also ↑ palability of herbal R_x and thus compliance)

Additionally: -Colloidal Silver (antioxidant properties)
-Garlic and MRSA

Common SE & symptoms associated with the cancer itself or in T_x

- Vomiting – *Ballota nigra* (black horehound) is an anti-emetic
- Nausea – *Zingiber officinale* (ginger)
- Loss of hair/alopecia – Vit B supplementation
- Shortness of breath – *Ephedra sinica* (ephedra), *Lobelia inflata* (lobelia)
Caution with dosage - Schedule III herbs
- Persistent fatigue – the ginsengs, Astragalus
- Anaemia (Fe-def) – *Urtica dioica* leaf (nettle), *Gentiana lutea* (gentian)
- Increased susceptibility to infection – *Baptisia tinctoria*, Echinacea, Garlic
- Constipation – *Cassia senna* (senna), *Rhamnus purshiana* (cascara)
- Diarrhoea – *Vaccinium myrtillus* (bilberry), *Juglans regia* (walnut)
- Insomnia / poor sleep pattern – *Valeriana officinalis* (valerian), *Echscholzia californica* (Californian poppy)
- Psychological Symptoms eg. worry, anxiety, depression – range of nervines
- Weight Loss/ Cachexia – Range of Bitter herbs eg. Artemisia, Gentian
- Altered Growth – possibly metabolic (thyroid) regulators
- Impaired Fertility – possibly hormone balancers, reproductive system tonics
- 2nd malignancy – the ginsengs & other immune boosters, lymphatics & alteratives (prophylactic)
- Mouth ulceration – Sage, Witch Hazel with Myrrh as a mouthwash (topically)

HERBAL SUPPORT IN PALLIATIVE CARE

The role of the medical herbalist within palliative care can offer much in respect of symptomatic relief as well as psychological support that's essential within cancer management. Addressing other problems that arise during treatment can ease much of the suffering during the terminal phase of life, making it less traumatic for patients and their families.

A range of nervines can address symptoms such as depression, insomnia, irritability, anxiety etc.....

Equally, pain relief can be sought with effective analgesics but requires much liaison between herbalists and the patients' doctors.

Appropriate nutritional advice can be given in order to ensure adequate intakes and to prevent complications arising that can exacerbate or aggravate symptoms.

The advanced stages of palliative care may involve respiratory symptoms and significant pain that can only really be addressed in a symptomatic manner. Much liaison is required here.

PLANTS AND CANCER PREVENTION

Preventative treatment in herbal medicine is essentially to support a patient with a strong familial history of cancer or preventing the reoccurrence of it. Much research is being conducted on plant remedies and indeed many of the conventional drugs currently used with cancer management have some origin or basis in plant medicines.

The American National Cancer Institute (NCI) identified a range of foods with cancer preventive properties. This was very much based on *in vitro* and *in vivo* studies in addition to significant epidemiological evidence.. the NCI grouped their research findings into 3 categories:

1.Highest anti-cancer activity found in:

- Garlic -allyl sulfides (AC) has numerous health enhancing properties
 - could also ↓ the mutagenic effects of chemotherapy (Chinese research)
 - shown to have some effect against MRSA (more recent UK research)
 - has high levels of Se (antioxidant)
- Soy beans -contains lignans & isoflavones (phytoestrogens)
- Ginger
- Licorice
- Umbelliferous Vegetables eg. carrots, celery, parsley, parsnips (all contain polyacetylenes)

2. Moderate anti-cancer activity found in:

- Onions – contain ally sulphides (numerous health-enhancing properties)
- Linseed (flaxseed) -high in Omega 3 EFA (EPA and DHA) and lignans
- Citrus fruits – high in flavonoids
- Turmeric
- Cruciferous vegetables (Brassicas) -broccoli, brussel sprouts, cabbage, cauliflower
 - some animal experiments suggest that these vegs ↑ the metabolism & excretion of oestrogen which could be beneficial in conferring protection against some oestrogen-dependent cancers esp. breast, uterine
- Solanaceous vegetables eg. tomatoes, peppers (contain lycopene)
- Brown rice
- Whole wheat

3. Modest anti-cancer activity demonstrated by:

- Oats
- Barley
- Cucumber
- Culinary herbs eg. mint, rosemary, thyme, oregano, sage, basil (associated with the phenolic compounds in the volatile oils)

Important Points about the above

- Most of the chemical groups with suggested anti-cancer activity are relatively robust to food preparation & are likely to reach target sites in their active form
- Mode of anti-cancer action is postulated to be via
 - a) Interaction with hormone receptors

- b) Interaction with metabolic pathways implicated in tumour generation
- Disappointing outcomes from large-scale studies on the effects of beta-carotene as a food supplement reinforces that it is not always certain that taking constituents in supplement form will turn out to be better than consuming food sources in their whole/natural form
- Studies (*in vitro* & *in vivo*) show that red grapeskin products confer anti-cancer activity via cyclo-oxygenase inhibition by the active ingredient resveratrol (a polyphenol). However, issues of bioavailability raises some doubt as to its clinical utility esp. oral consumption.
- Prevention of cancer may be assisted by the use of adaptogens, notably *Panax ginseng* (fresh over white) – the effects has been shown to be dose-related (based on a 5 year study in the commonest cancers: lung, stomach & liver).

PROTECTIVE FOODS Some additional & general recommendations

- At least one veg in the cabbage family eg. broccoli, cabbage
- Some garlic or onion daily (anti-cancer, lipid-lowering properties)
- Fresh, whole fruits and vegetables
- Antioxidants
 - a) combat free radicals that cause oxidative damage that's linked to disease
 - b) consume foods high in flavonoids
 - c) vitamins A, C and E, beta-carotene, Se all known to:
 1. block various phases of cancer development
 2. act synergistically with each other & with dietary components to exert a protective effect
 3. main protective effects occur during the 'initiation' and 'activation' phases of cellular change (ie. protects individual groups of cells from carcinogenesis which have bypassed the body's inherent defence systems & mechanisms)
- Recurring suggestion that foods contain many different protective compounds which play an important role – it is vegetables in their entirety, rather than individual components that are protective
- It is advisable that both fruit and vegetable are consumed in their recommended proportions. Fruits should not replace vegetable-filled meals since they are generally lower in minerals and higher in sugars than vegetables and are best consumed whole (not juiced) in order to retain the fibre and slow the absorption rate of sugars.
- Another consideration = Raw vs Cooked
- Carotenoids – red, yellow & orange vegs & fruits (high in beta-carotene = a major antioxidant & cancer preventive food component that's a precursor to Vit A). Significant quantities found in carrots, sweet potato, pumpkin, papaya (paw paw), oranges, apricots, peaches). Also found in dark green, leafy vegs.
- Lycopene – found in tomatoes
- Beetroot – rec. 200-250g of finely grated beetroot daily. Found to stop the progression of cancer (in most cases) but the mechanism of its action is unknown

- Citrus fruits – Vit C and pectin have been implicated in conferring protection
- Soya products – xref. information sheet on Phytoestrogens
- Green tea – contain polyphenols with powerful antioxidant properties
- Fibre
 - a) ↓ risk of colon cancer
 - b) ↑ prodⁿ of short-chain FA which protect the bowel wall from abnormal cell change
 - c) especially important for ♀- ↓ risk of oestrogen-dependent cancers incl. breast cancer
 - d) different types of fibres – ensure adequate intakes of all by incorporating a varied diet and foods in their whole form
- Wheat & Psyllium (husks) – combined is better than each on their own
- Yoghurt & Fermented Milk products – some evidence that bacteria normally in these foods can inactivate carcinogens esp. in the bowel. Also implicated in preventing breast cancer
- Foods to reduce or avoid:
 - a) Fats esp. saturated
 - b) Alcohol (but moderate amounts of red wine can be beneficial in other disease)
 - c) Coffee – linked to bladder cancer but can ↓ risk of bowel cancer

General Advice: to **moderate** and **vary** everything regarding diet.

SUMMARY

- Herbalists' perspective on cancer – onset & treatment rationale
- No herbal treatment can claim to cure cancer
- **Herb-drug interactions** – can often limit adjunct therapy or progress in management
- Pharmacokinetic variations & individual differences
 - a) Must be accounted for
 - b) Cannot always be predicted in any given treatment regime
- Importance of diet **must** be given due emphasis
- Claims by manufacturers of commercial preparations – must be viewed with some caution as they can vary significantly in content, quality and strength.

Useful Reading

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4. Holford, P. (2002) **The optimum nutrition bible**. Piatkus Publ.
5. Williams, X. (1998) **Liver detox plan**. Vermilion

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