The Role of Naturopathic Medicine in Cancer Care

Ottawa Regional Cancer Foundation
Lunch and Learn – January 19th, 2011

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The Canadian College of
Naturopathic Medicine

Outline

- Use of Complementary Medicine in Cancer Care
- Cancer Physiology and Targets
- Therapeutic Examples
- Integral Healing Program
- Questions, Discussion & Dialogue

Defining Terms

Conventional/orthodox/allopathic medicine

CAM – **C**omplementary and **A**lternative **M**edicine

NHP – Natural Health Products

Alternative – in **'opposition to'** or 'instead of'

Complementary – in **'addition to'** conventional medicine

Integrative – in **'collaboration with'** conventional medicine

- Support patient's optimal care from **both** complementary and conventional medicine

The Canadian College of Naturopathic Medicine (CCNM) - Academic Program -

- 4 year, full-time post-graduate program
- 130 students per class
- 4,200 hours of classroom and clinical training
- CCNM is one of 7 Accredited Colleges
  - The Canadian College of Naturopathic Medicine - Toronto
  - Boucher Institute of Naturopathic Medicine - Vancouver

Academic Program

Main areas of study

- Clinical Education
  - Differential Diagnosis
  - Laboratory Diagnosis
  - Integrated Clinical Studies
  - Pediatrics
  - Primary Care
  - Women's Health
- Bio-Medical Sciences
  - Anatomy
  - Physiology
  - Pathology
  - Biochemistry
  - Immunology
  - Pharmacology

Academic Program

- Treatment Modalities
  - Clinical Nutrition
  - Botanical Medicine
  - Asian Medicine
  - Homeopathy
  - Physical Medicine
  - Lifestyle Counselling

Regulation of Naturopathic Doctors (NDs)

Provincially for ND's trained at accredited colleges

- Legislation in 6 provinces
  - NS, ON, MA, SK, AB, BC
- Entrenched regulation in 5 provinces
  - ON, SK, MA, AB, BC

Quebec – no legislation or regs

- Handful of NDs in Quebec (mostly Mtl)
  - Seeking regs for safety from 'l'Office des Professions'
- 2000 to 3000 thousand 'naturopaths'

  - training in a one weekend course up to 2 years

CAM/NHP Use

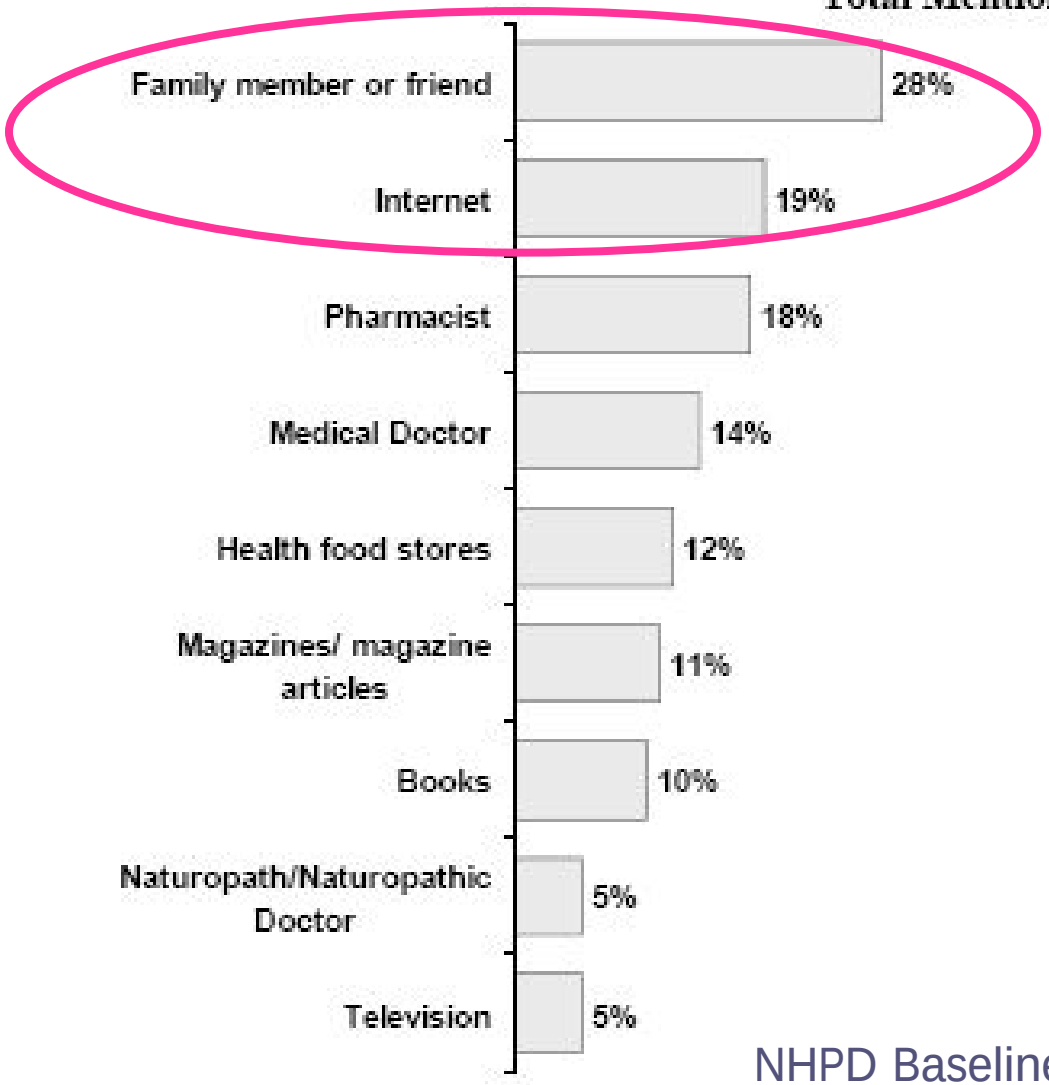
- 71% of Canadians have ever used an NHP(NHPD Baseline Survey 2005)
  - 38% of these use NHPs on a daily basis
- 20% of Canadians visited a CAM provider in 2003 (2003 Canadian Community Health Survey)
- Over 80% individuals diagnosed with cancer use CAM/NHPs

Slide Courtesy of Dr H. Boon

Current Sources of Natural Health Products Information

From whom do you obtain information in order to learn about natural health products? Any place else?

Total Mentions



Mentions less than 3% not shown

NHPD Baseline Survey 2005

Base: Have used a NHP N=1,346

Patients Don't Often Speak About CAM Use

- Approximately 50% of patients who use CAM/NHPs do not tell their physicians

Reasons:

- no one ever asked
- don't consider it medicine
- didn't think it was important
- fear of rejection
- "MDs don't know anything about it anyway"

Slide Courtesy of Dr H. Boon

So What?

- Risk of Harm
  - potential for direct AEs
  - risk of interactions

- Benefits may be mis-attributed
  - beneficial products/therapies may be over-looked

Slide Courtesy of Dr H. Boon

HCP Responsibilities

- Initiate dialogue about CAM/NHPs
- Share their knowledge and experience
- Help patients to critically evaluate information about CAM/NHP options
- Document use, benefits and harms of CAM/NHPs
- Provide their best professional advice
- Respect patients' decisions

Slide Courtesy of Dr H. Boon

Patients' Responsibilities

1. **Find out as much as you can about CAM/NHPs you are considering**
   - be a critical consumer
   - the internet is great BUT…..
   - look for info from credible sources
   - check that info is up to date
   - look for information relevant to cancer and your specific diagnosis
   - beware of cures and patient testimonials
   - look for info about benefits and risks

Slide Courtesy of Dr H. Boon

Patients' Responsibilities cont.

2. **Initiate dialogue with your HCPs** (if they don't)
   - be prepared
   - your HCP may know little about the NHPs/CAM
   - expect healthy skepticism – this is the way we are trained to approach all "new" therapeutic options

Slide Courtesy of Dr H. Boon

Tips for talking to your HCPs

- Ask to arrange time to talk
- Focus on the NHPs/CAM in which you are most interested
- Explain why you are interested
- Bring a list of specific questions

(CCS Complementary Therapies a Guide for People With Cancer)

Making the Decision

- You need to make the right decision for you
- Things to think about:
  - is it safe?
  - how much will it cost?
  - what is the time commitment?
  - how will it work with my other therapies?
  - how will I know if it's helping me?

(CCS Complementary Therapies a Guide for People With Cancer)

Tips for Choosing a CAM Practitioner

- Ask for referrals
- Ask about the practitioner's training and qualifications
- Find out about the practitioner's experience with other individuals with cancer
- Ask if the practitioner is willing to work with your other HCPs
- Ask for detailed information about the benefits, risks and costs (and length) of the therapy

(CCS Complementary Therapies a Guide for People With Cancer)

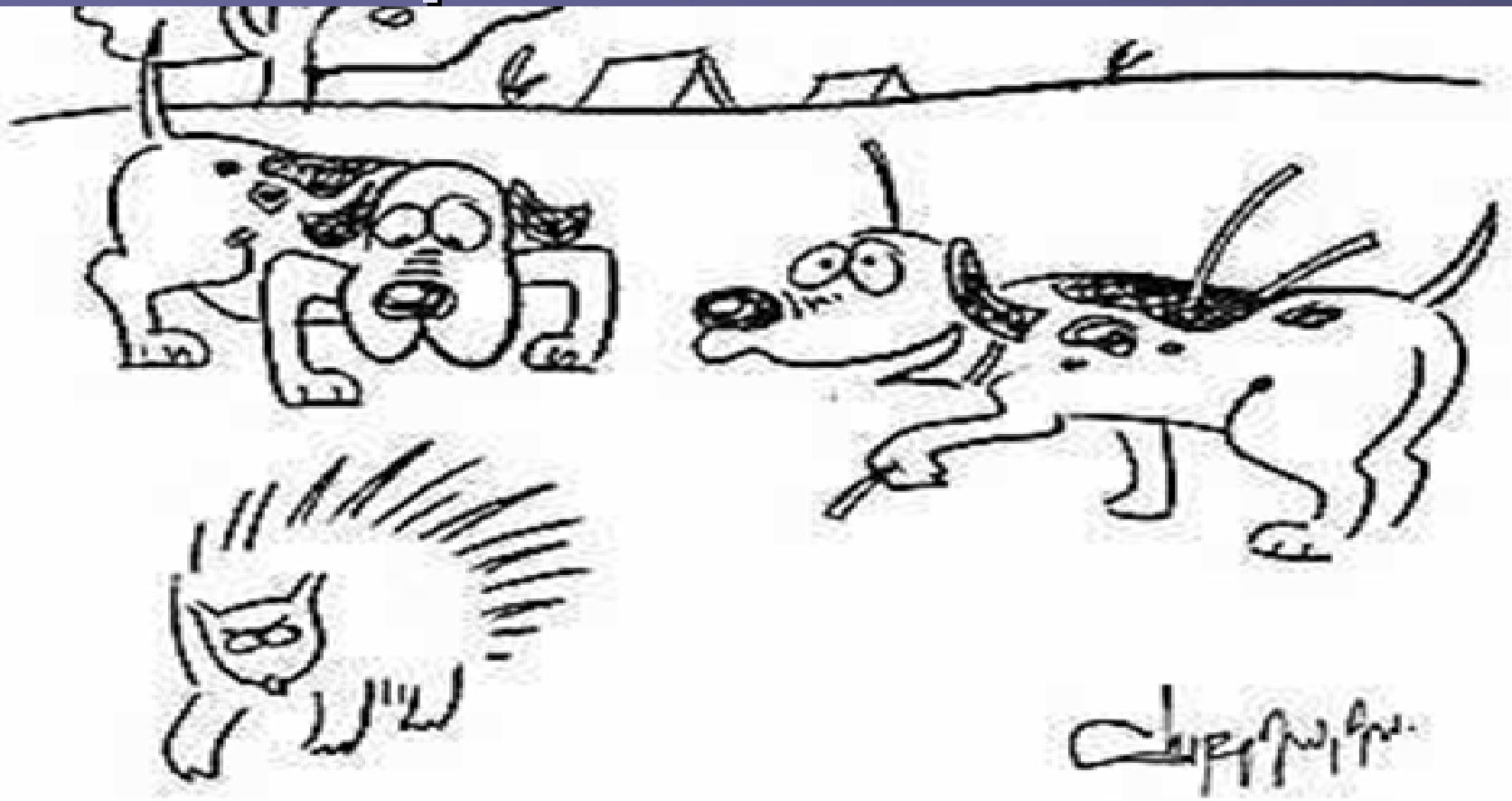
Tips for Choosing a CAM Practitioner cont.

- Beware of:
  - claims of being able to “cure” cancer without risk

- Salespeople that are not trained health care practitioners

(CCS Complementary Therapies a Guide for People With Cancer)

Acupuncture in the Wild



Hey! my lower back pain! It's gone!

Vulnerable Targets of Cancer Progression Processes of Metastasis and Angiogenesis

- Mets responsible for 90% of mortality
  - 2005 - Weigelt et al. Nat Rev Cancer
- Requires a succession of multiple steps leading to outgrowth of malignant cells in a new organ environment
- Tumour cannot grow beyond $3mm^3$ without angiogenesis

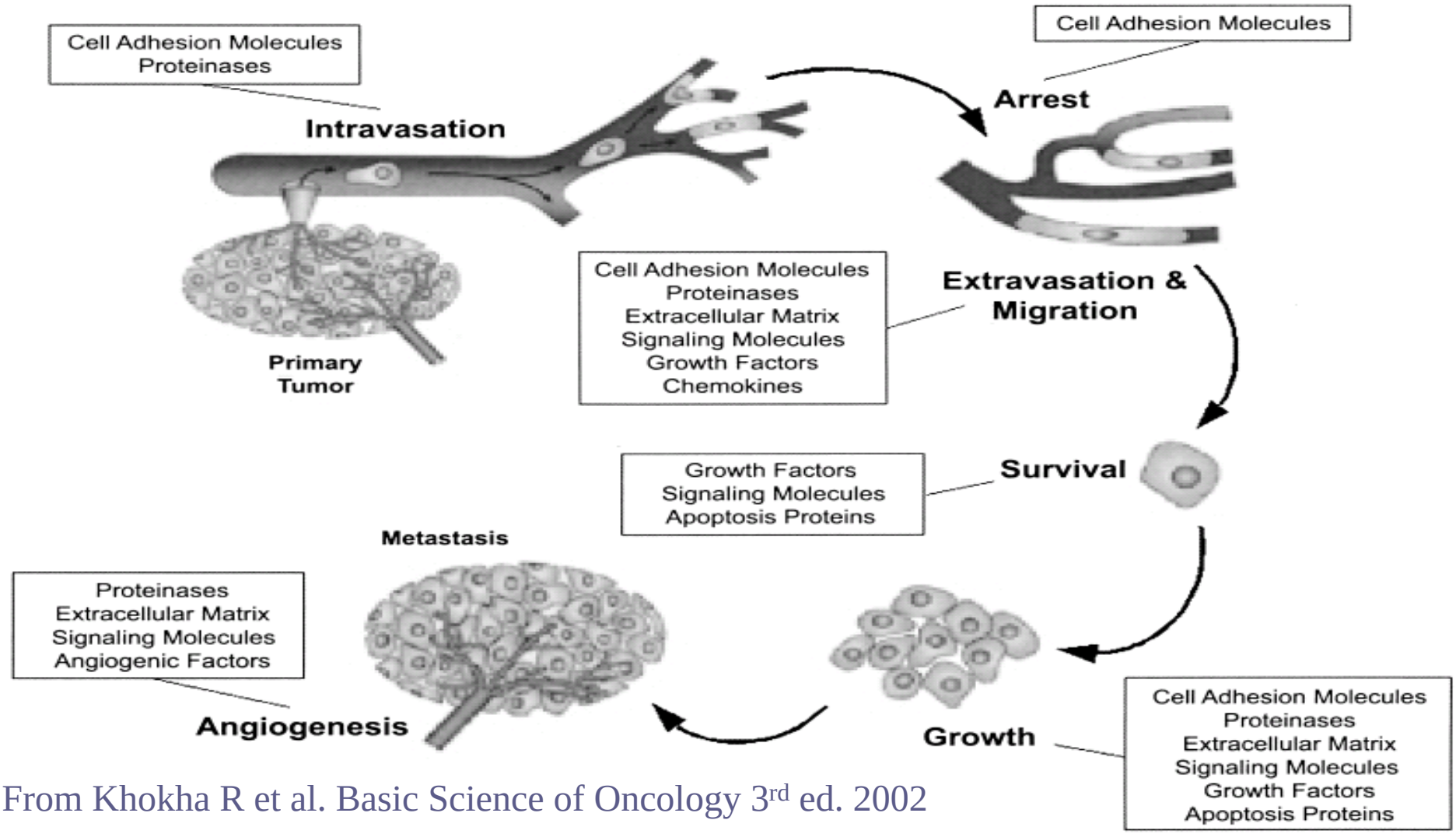
Metastatic Inefficiency

- Emerges from genetically diverse cancer cells under selective pressures
  - **Evolutionary process**
  - Cell requires **accumulation of multiple attributes** in order to become metastatic

- Many many tumour cells shed from primary tumour, however metastases **do not** consistently develop
  - **Some tumours shed over 1x 10^9 living cells per day however, extremely small number capable of successfully spreading**
  - Metastases require a number of criteria

Metastasis is a very difficult process

Steps Required for Metastasis



From Khokha R et al. Basic Science of Oncology 3rd ed. 2002

Barriers to metastasis

1. Acquire cell motility
2. Resist extracellular and intracellular death signals
3. Break down basement membrane and extracellular matrix
4. Ability to intravasate
5. Ability to survive open transport in circulation
6. Ability to evade the immune system
7. Ability to extravasate
8. Ability to co-opt local stromal cells
9. Ability to promote angiogenesis
10. Be indefinitely self-proliferative

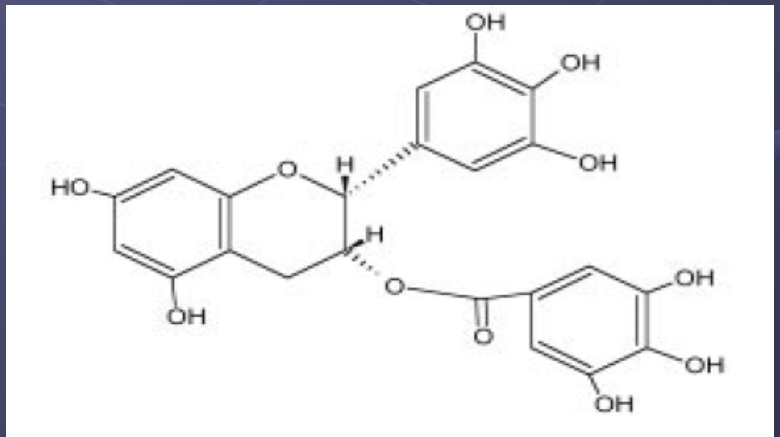
Natural Health Products in Cancer Care

- Anticancer NHPs often have multiple modes of action
  - antiangiogenic, immunostimulant, antiproliferative
- Contain great number of complex compounds with synergistic potential
  - Targeting the metastatic and angiogenic pathways may offer best opportunity to manage cancer
- Important to consider efficacy, dose, pharmacology, interactions, cost, and palatability

Opportunities for Effective Cancer Care

- Potential synergies by combining therapies
  - Reduced likelyhood of developing resistance
  - More cancer benefit
  - Less toxic
- Reductions of adverse effects from conventional therapy
  - Nausea, pain, fatigue, immune dysfunction
- Improved quality of life and survival

Green Tea



Green tea and cancer Epidemiology

- Prevalence and patterns of consumption
  - Many cancers less common in Asia
  - High green tea consumption levels in Asia
- Conflicting Results from epidemiological studies
  - Potential role in prevention of prostate, stomach, colorectal, esophageal, skin, lung, and breast cancers

Green tea and cancer

- Anti-carcinogenic
- Modulates estrogen's proliferative effect
- Induces tumor cell apoptosis
- Anti-proliferative
- Anti-angiogenic
- Inhibition of metastasis

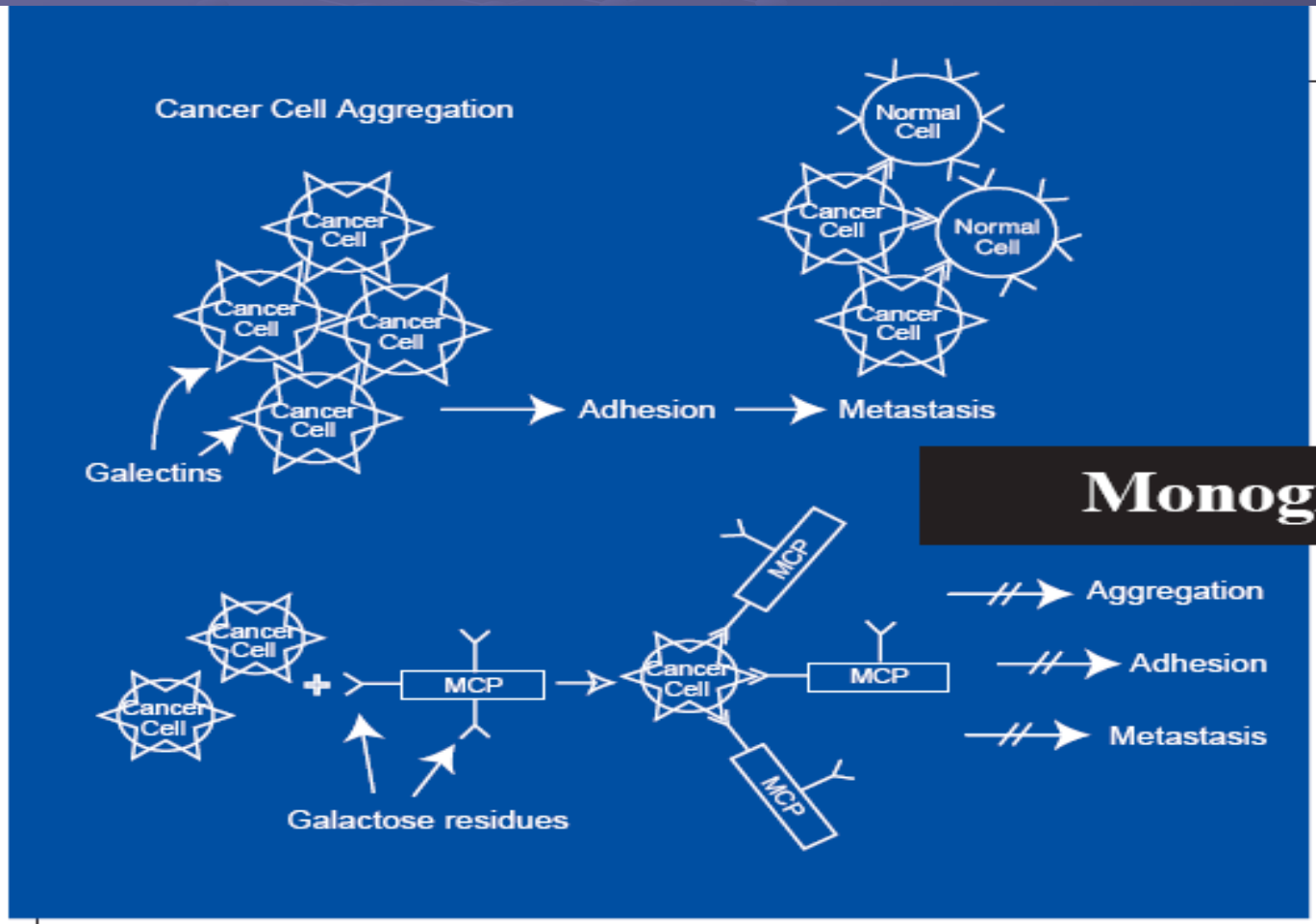
Green Tea (EGCG) pharmacology

- Dosage:
  - 6 or more cups per day
    - 300 to 600 mg of EGCG daily
- Safety
  - Possible stimulant action as a result of caffeine
  - Moderated by l-theanine (sedative effect)
- Pharmacokinetics
  - Half life: < 5 hours
  - Time to clear – one day
- Interactions with chemo
  - Antioxidant
  - Unlikely/unknown

Modified Citrus Pectin (MCP)

- Complex water-soluble polysaccharide extracted from pulp and peel of citrus fruits
  - rich in galactose
- Thought to competitively bind surface galectins (galectin 3) of cancer cells blocking ability to self aggregate and adhere to endothelial cells
  - hindering ability to survive in bloodstream
  - hindering ability to extravasate
- May potentially stop clumping and embolus formation
  - may reduce tendency toward coagulative state associated with cancer

Modified Citrus Pectin

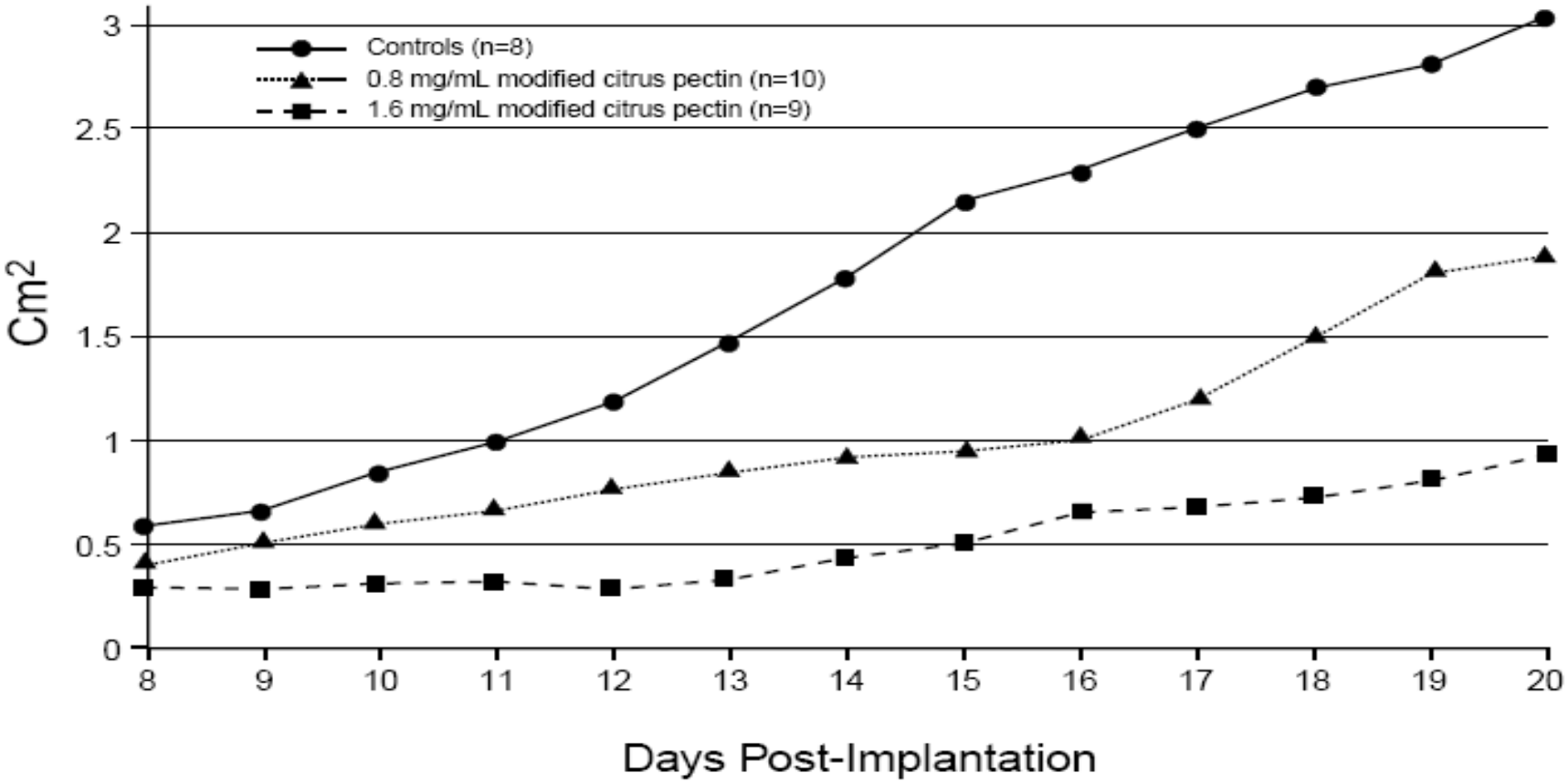


Alt Med Rev monograph 2002

MCP - Preclinical Evidence

- Reduction of prostate cancer metastasis in rats given oral MCP
  - Pienta et al. J Natl Cancer Inst. 1995
- Melanoma metastasis to the lung reduced by 90% when mice given MCP orally. Compares to no reduction when given only citrus pectin.
  - Platt and Raz. J Natl Cancer Inst. 1992
- 70% Reduction in formation of primary tumour in mice with colon tumour graft in mice
  - Hayashi and Lott. Alt Med Rev. 2000
- Nearly 90% reduction in metastases to lung and bone using both prostate and breast cancer cells in mice
  - Glinskii et al. Neoplasia. 2005

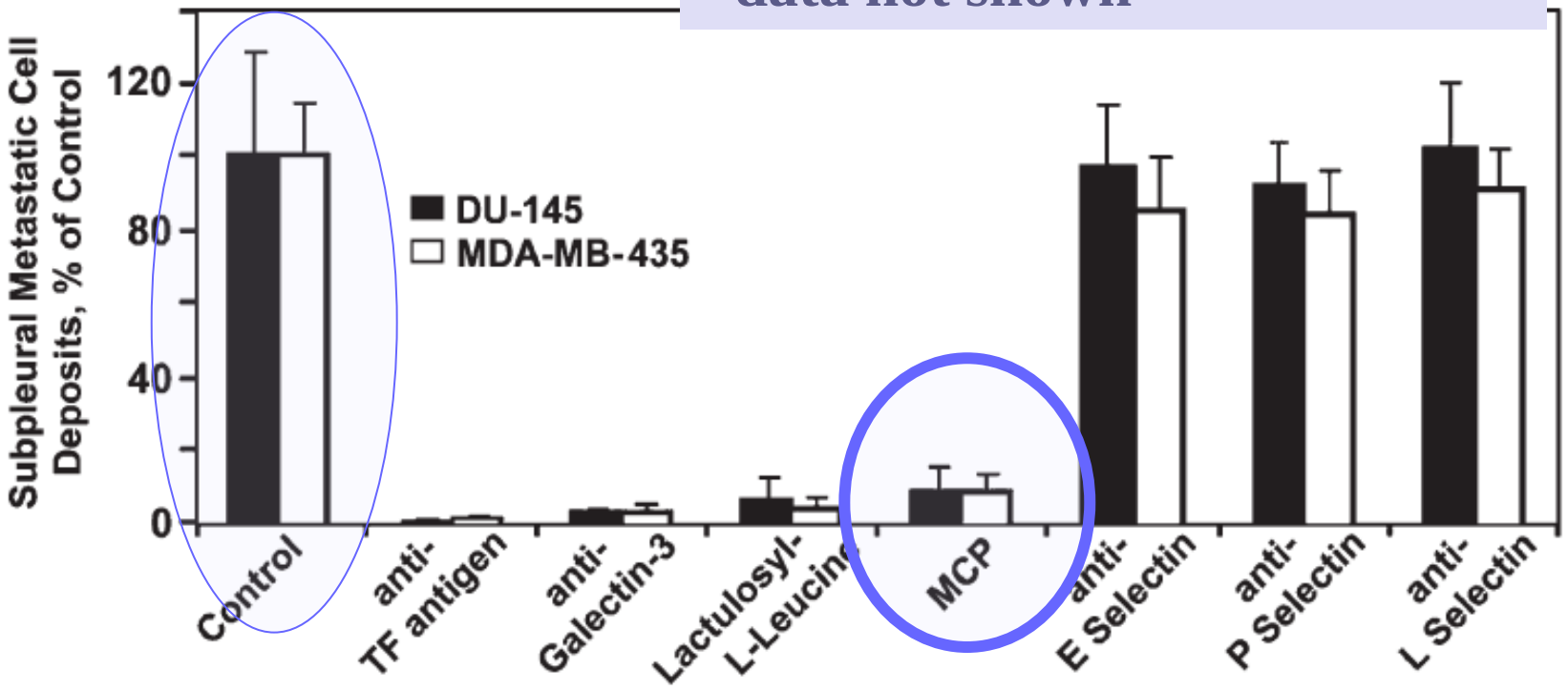
Effects of oral MCP on growth of Colon cancer tumours in Balb-c Mice



Hayashi and Lott – 2000 Alt Med Rev

MCP reduces number of lung metastases from prostate and breast cancer cells - in mice

Similar situation for bone mets - data not shown



Glinskii et al. Neoplasia 2005

MCP - Clinical Evidence

- Uncontrolled open labelled trial found doubling time of PSA went up significantly in 7 out of 10 men with Prostate cancer ingesting 15 gms daily for 12 months.
  - Guess BW et al. Prostate Cancer Prostatic Dis. 2003
- Promising phase I study finding ‘sustained stable disease’ in many patients
  - Grous et al. 2006 ASCO Annual Meeting Proceedings

MCP - Pharmacology

- Dosage:
  - 6 to 30 grams daily in divided doses
  - 15 grams used in prostate cancer pts
- Safety
  - No adverse effects reported, some gastric intolerance
  - Contraindicated → citrus allergies
- Pharmacokinetics
  - Half life: 36 hours
  - Time to clear – aprox 5 days
- Interactions with chemo
  - Unlikely

Other NHPs

Mushrooms – immune builders

- Restoring immune function post chemotherapy

- **Coriolus versicolor (PSK) ~ Turkey tail**
  - 4,000 – 6,000 mg/day (hot water extract)
- Grifola frondosa ~ Maitake
  - 2,000 – 4,000 mg/day (hot water extract)

Other NHPs (cont'd)

- Vitamin D – prevention!
- Flax & fish oils - anti-inflammatory
- Berries – natural antiangiogenic agents
- Cruciferous vegetables - breast cancer
- Lycopene – prostate cancer
- Zingiber officinale – 'nausea'
- Panax ginseng – 'fatigue'
- Milk thistle – 'liver protection'

Combining Natural Health Products with Chemotherapy

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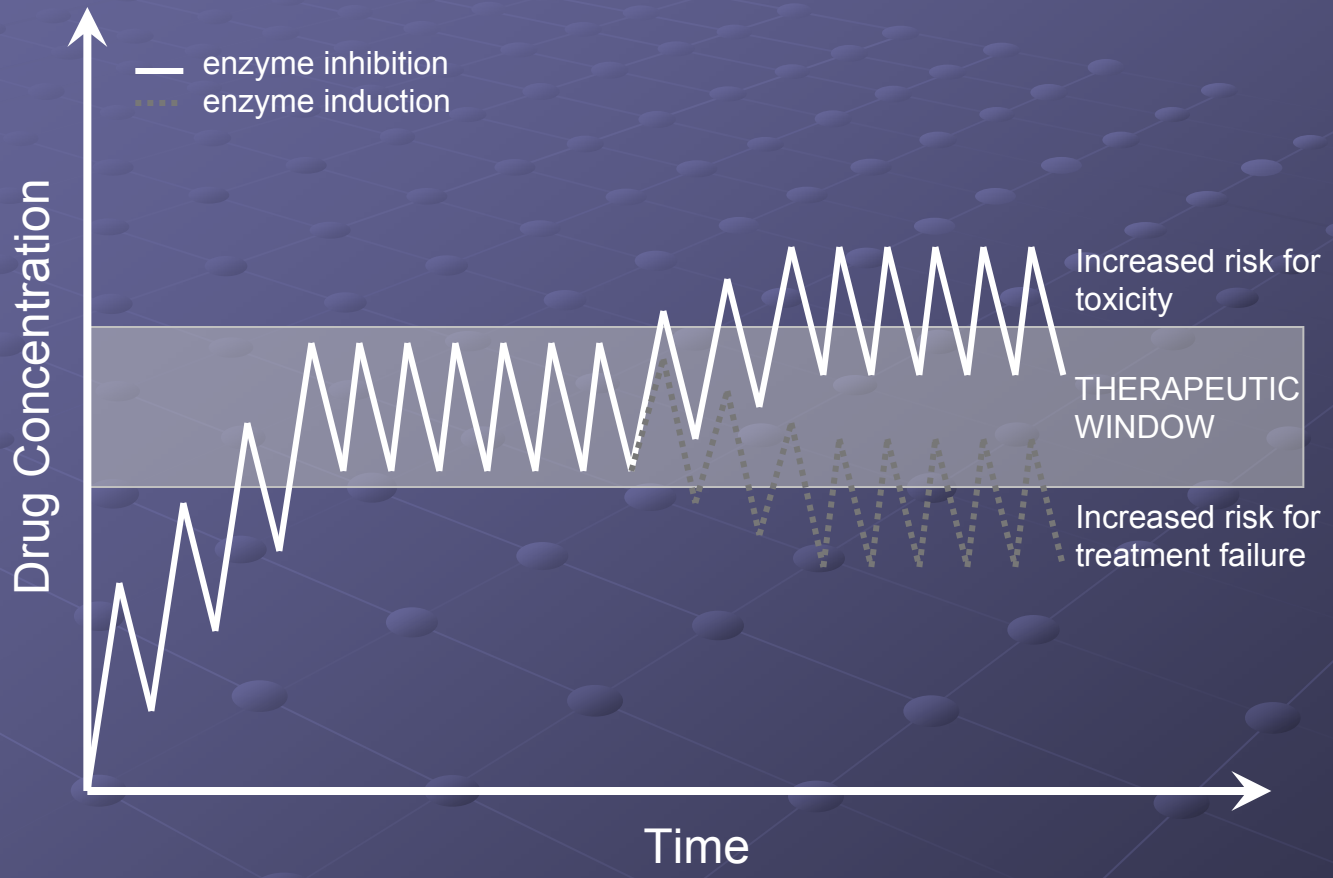
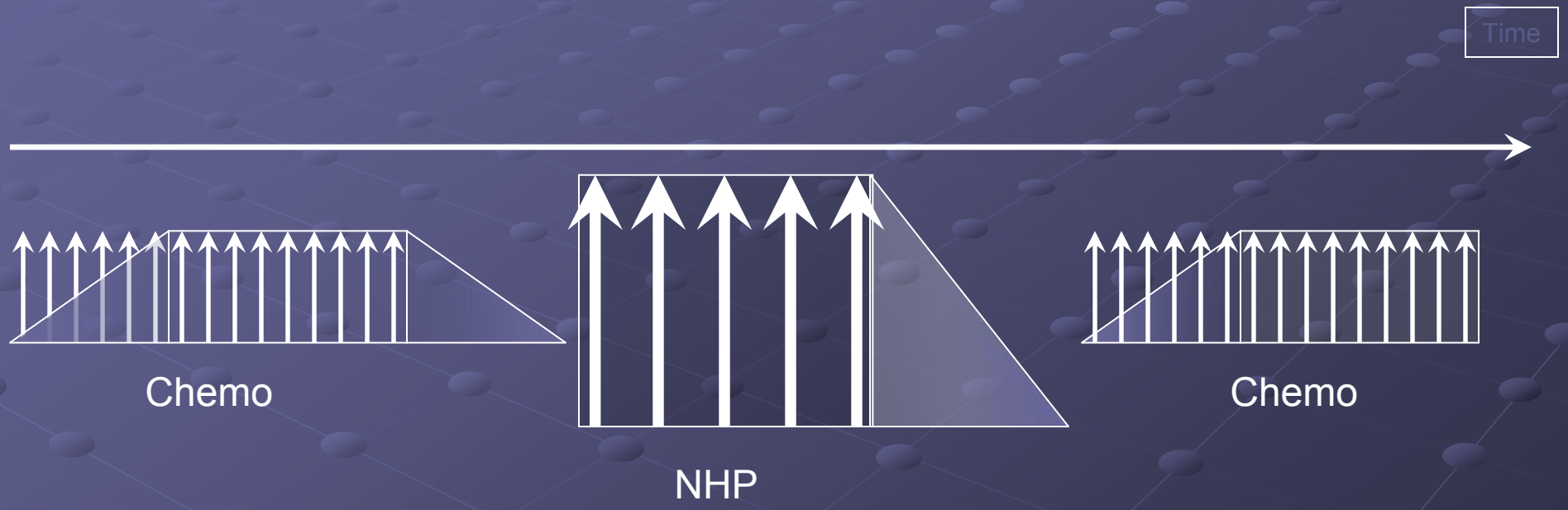
NHP/chemo interactions are important!



Seely et al. J Ped Hem/Onc. 2007

Low likelihood for interaction



Seely et al. J Ped Hem/Onc. 2007

Important Considerations to Avoid Interactions

- Avoid high dose antioxidants within at least two or three days preceding chemotherapy and radiation therapy
- Respect ability to combine therapy, needs and desires, and the perspective of the oncologist
- Greater caution in cases where clearly curative treatments are likely with conventional care

Supplement/NHP Safety

- Natural ≠ Safe
- Contraindications
- Drug-Herb interactions
- Drug-Nutrient interactions
- Interactions with radiation
- Adverse effects
- Realistic expectations
- Resources
- Dietary intake

Basics of Anti-Cancer Nutrition

The Essentials:

Fats

Carbohydrates

Fiber

Proteins

Vitamins

Fats – a balancing act

- Studies associate diets rich in animal fat with higher incidence of cancer
- Fats can be broadly broken down into types: essential and non-essential fats
- Essential fats include the Omega 3s and Omega 6s
- We need a balance of these fats
  - Contemporary diet, rich in animal fats is generally richer in omega 6s
- Omega 6 fats associated with inflammation
  - Inflammation is associated with cancer

Modified Fats

- Synthetic or modified fats are a product of processing that can lead to the production of trans fatty acids
  - Increase capacity to process foods well
- Trans fatty acids are structurally similar to normal fatty acids, however they do not behave in the same way in the body
- There is some indication that these fats are associated with increased breast cancer risk

Carbohydrates

- Fundamental fuel for the body
- Too much clearly has a negative effect
  - Can lead to obesity
    - Clearly established cancer risk
  - Triggers insulin and insulin-like growth factor release
    - May increase cancer cell growth
    - Greater issue in premenopausal women

Sugars to avoid

- Products that are highly processed
  - Refined grains & flours allow faster rush of sugar into the blood
    - Increased ability to spike insulin
  - Examples include: white bread, white rice, white flour, candy, ice cream, and soft drinks
- Better to eat foods rich in vitamins and fiber
  - Whole grain foods, fruits, and vegetables
  - Eat locally as much as possible – for the environment as well to reduce nutrient degradation

Protein

- Provides the building blocks of life
- If diet is too high in protein, then we risk not having enough fruits and vegetables in our diet
  - Of course if we eat too much of everything (and especially of certain types of foods) obesity may arise
- Remember the association of high consumption of animal proteins with increased cancer risk

Fiber

- Fiber provides a sponge to soak up estrogen from the colon thereby clearing excess estrogen from the system

more fiber = less estrogen = less risk of breast cancer

- Dietary fiber only found in foods from the plant kingdom so the more foods such as meat, cheese, milk, and eggs are consumed; the fewer fruits, vegetables, grains and beans are eaten.

Naturopathic Oncology: Goals

- SAFETY
- Decrease side-effects of conventional cancer treatments
  - Improve QOL
  - Maintain treatment schedules
- Support activity of conventional cancer treatments
- Support healing process after surgery
- Symptom control
- Minimize cancer-related disease processes
- Immune system support
- Chemoprevention

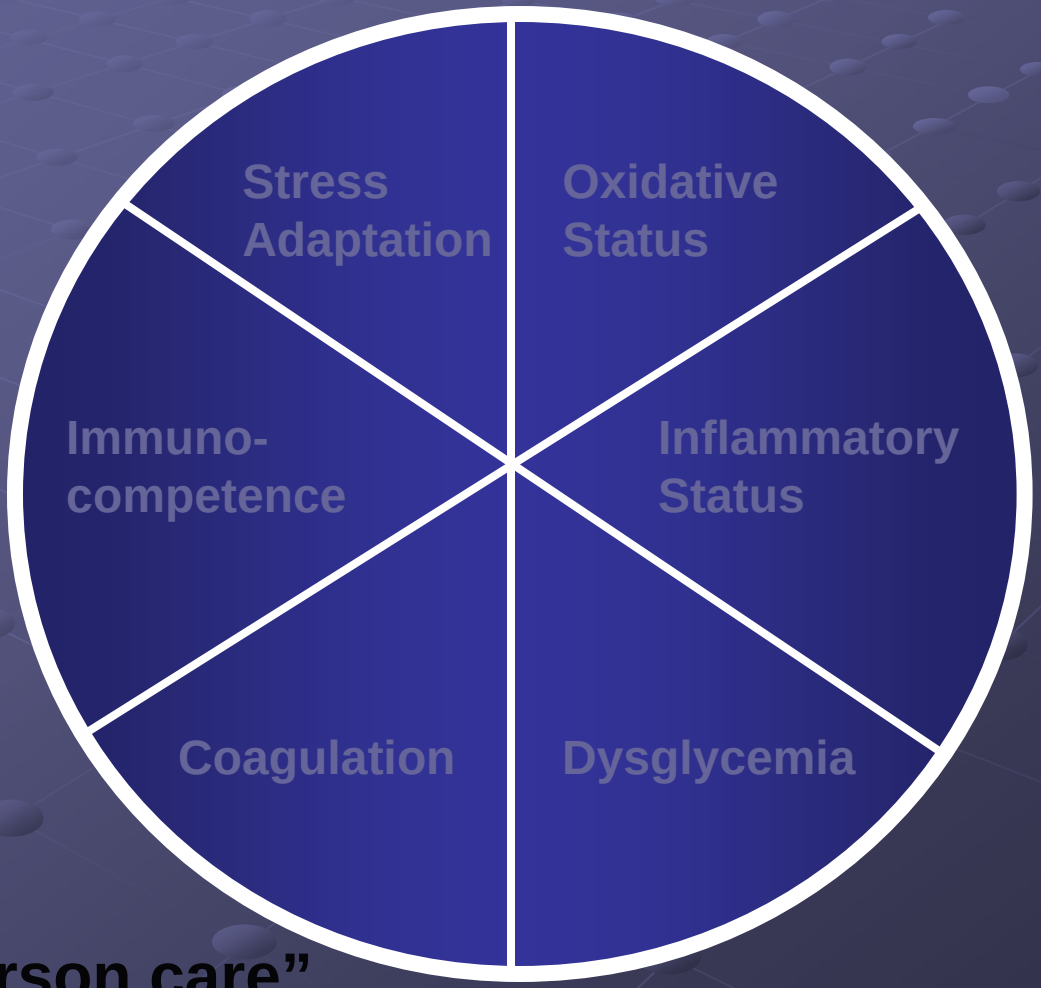
PATIENT-CENTERED INTEGRATIVE/ NATUROPATHIC CARE

‘Lifestyle based - Individualized Care’

“Whole person care”

PATIENT-CENTERED INTEGRATIVE/ NATUROPATHIC CARE

‘Biologically Based - Individualized Care’



“Whole person care”

MINIMIZING SIDE EFFECTS OF CONVENTIONAL CANCER TREAMENTS

Gastrointestinal toxicity

l-Glutamine

- **Study**: Glutamine use with high dose Taxol and Melphalan for BRCA patients
  - Administered as swish & swallow, 24 G daily in divided doses
  - Patients in the glutamine group demonstrated significantly fewer days of **mucositis** and a lower maximum grade of mucositis
  - Glutamine group had less oral ulceration and bleeding, and were able to **tolerate liquids sooner** than those in the non-glutamine group
    - Ann Pharmacother. 2000 Mar;34(3):300-3

Neurological toxicity

l-Glutamine

- **Study**: Patients receiving Taxol given glutamine vs. no intervention
  - Glutamine: 10 G tid given for 4 days, 24 hours after completion of chemo
  - Statistically significant reduction in:
    - severity of development of moderate to severe **neuropathy** in the fingers and toes ($P < 0.05$)
    - degree and incidence of **motor weakness** ($P = 0.04$)
    - deterioration in **gait** ($P = 0.016$)
    - interference with **activities of daily living** ($P = 0.001$)
      - Clin Cancer Res. 2001 May;7(5):1192-7

Surgery

- Surgery may be utilized to remove a primary tumor or debulk a metastatic lesion
- Goals of supporting patients through surgery:
  - Decrease pain
  - Decrease inflammation
  - Decrease infection
  - Decrease adhesions
  - Provide precursors to connective tissue, DNA and RNA repair
  - All equal = SPEED HEALING PROCESS and increase patient comfort

Surgery

- Study: 256 patients were randomized to receive PPN with or without omega-3 after abdominal surgery
  - Plasma levels of eicosapentaenoic acid, leukotriene B5, and antioxidant content were significantly increased in omega-3 group
  - Omega-3 group had a significantly shorter length of hospital stay of approximately 21%
    - Crit Care Med. 2007 Mar;35(3):700-6.

Cancer Related Symptoms

- Fatigue
- Sleep disturbance
- Nausea/Emesis
- Diarrhea/Constipation
- Mucositis
- Neuropathy
- Anxiety/Depression
- Cachexia
- “Brain fog”

Cancer-Related Symptoms

FATIGUE

- Cancer related fatigue is the most frequently reported symptom of cancer and cancer treatment and can significantly impair patient's QOL
  - Onc Nursing Forum. 1996;23:1534-47.
- Between 60-96% of all people with cancer experience fatigue
  - Biol Res Nurs. 2001;2:186-97.

Fatigue

- l-Carnitine deficiency is common in cancer population, especially post-treatment
- l-Carnitine is involved in energy production
- Study: 38 cancer patients screened for carnitine levels (76% deficient) and treated with carnitine supplement
  - Carnitine levels increased
  - No side effects or toxicities noted, significant decreases seen in:
  - Brief **Fatigue** Inventory ($P<0.001$)
  - Epworth **Sleeplessness** Scale ($P=0.001$)
  - Center for Epidemiologic Studies **Depression** Scale ($P<0.001$)

J Pain Symptom Manage. 2006 Dec;32(6):551-9.

Cachexia

- Increasing protein and calorie intake
  - Protein-dense meals and snacks
  - Address obstacles to dietary intake
  - Address gastrointestinal complaints
  - Address digestive complaints
  - Consider appetite stimulants

Cachexia

- Fish Oil
  - Modulates the cytokines involved in cachexia leading to reversal of weight loss
    - Nutr Cancer 2001;40(2):118-24.
  - The antiinflammatory effects, when combined with nutritional supplementation, leads to weight gain (lean tissue) and increase in performance status
    - Nutrition 2001 Sep;17(9):751-5.

Cachexia

- Melatonin
  - 100 untreatable solid-tumor cancer patients received supportive care or supportive care + Melatonin
  - Percent of **weight loss greater than 10%** was significantly higher in patients treated by supportive care alone than in those concomitantly treated by melatonin, with **no difference in food intake**
  - Mean serum levels of **TNF** progressively increased in the supportive care group while TNF concentrations significantly decreased in patients treated with melatonin
    - Eur J Cancer. 1996 Jul;32A(8):1340-3.

Conclusions

- Naturopathic therapies can be safely integrated into cancer treatment plans in order to:
  - Decrease side-effects of conventional treatment
  - Support effect of conventional treatment
  - Speed healing process after surgery
  - Aid in symptom management
  - Help manage other cancer-related diseases
  - Support the immune system
  - Chemoprevention
- Cautions important around issue of interactions with conventional therapies especially chemotherapy and radiation therapy

Integral Healing Program: Empowerment on the Cancer Journey

5 Modules

1. Education and Empowerment
   - Physiological targets and supporting the body
2. Complementary Medicine and Cancer
   - Hands on exploration of therapies and approaches
3. Prevention of recurrence
   - Nutrition, environment and prevention
4. Family Dynamics and Health
5. Mindfulness Meditation

THANK YOU FOR LISTENING

- Questions??
- Dialogue
- Discussion

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