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## Naturopathic Oncology

What is it, and how can it help?

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# Naturopathic Medicine

Naturopathic medicine is a distinct primary health care profession, emphasizing prevention, treatment, and optimal health through the use of therapeutic methods and substances that encourage individuals' inherent self-healing process.

The practice of naturopathic medicine includes modern and traditional, scientific, and empirical methods.





# Principles

*Primum Non Nocere*- First Do No Harm

*Vis Medicatrix Naturae*-

The Healing Power of Nature

*Tolle Causam*- Find the Cause

*Tolle Totum*- Treat the Whole Person

*Docere*- Doctor as Teacher

Prevention



# Scope of Practice

- Primary Care
- Hx and P.E.
- Laboratory Diagnosis
- Diagnostic Imaging
- Venipuncture
- I.V.
- Botanical Medicine
- Homeopathic Medicine
- Mind-Body Medicine
- Minor Surgery
- Physical Medicine
- Therapeutic Nutrition
- (Acupuncture & Oriental Medicine)



# Education

- 4 years of pre-med
- 4 years medical school- didactic & clinical
- 1-2 year residency (optional)



# Naturopathic & Major Medical Schools Comparative Curricula

	National College of Naturopathic Medicine	Bastyr University-Naturopathic Medicine	Yale University	Johns Hopkins	Medical College of Wisconsin	Trinity College of Natural Health	Clayton College of Natural Health
	Federally & Regionally Accredited Naturopathic Medical School	Federally & Regionally Accredited Naturopathic Medical School	Federally & Regionally Accredited Conventional Medical School	Federally & Regionally Accredited Conventional Medical School	Federally & Regionally Accredited Conventional Medical School	Non-accredited Naturopathic Medical Training	Non-accredited Naturopathic Medical Training
<b>Basic and Clinical Sciences:</b> Anatomy, Cell biology, Physiology, Histology, Pathology, Biochemistry, Pharmacology, Lab diagnosis, Neurosciences, Clinical physical diagnosis, Genetics, Pharmacognosy, Bio-statistics, Epidemiology, Public Health, History and philosophy, Ethics, and other coursework.	1548	1639	1420	1771	1363	272	100
<b>Clerkships and Allopathic Therapeutics:</b> including lecture and clinical instruction in Dermatology, Family Medicine, Psychiatry, Medicine, Radiology, Pediatrics, Obstetrics, Gynecology, Neurology, Surgery, Ophthalmology, and clinical electives.	2244	1925	2891(+thesis)	3391	2311	0	0
<b>Naturopathic Therapeutics:</b> Including Botanical medicine, Homeopathy, Oriental medicine, Hydrotherapy, Naturopathic manipulative therapy, Ayurvedic medicine, Naturopathic Case Analysis/Management, Naturopathic Philosophy, Advanced Naturopathic Therapeutics.	588	633	0	0	0	336	300
<b>Therapeutic Nutrition</b>	144	132	0	0	0	176	50
<b>Counseling</b>	144	143	Included in psychiatry (see above)	Included in psychiatry (see above)	Included in psychiatry (see above)	0	25
<b>TOTAL HOURS OF TRAINING</b>	<b>4668</b>	<b>4472</b>	<b>4311+thesis</b>	<b>5162</b>	<b>3674</b>	<b>784+dissertation</b>	<b>475+dissertation</b>



# Naturopathic Oncology

- **Naturopathic oncology** is the application of the art and science of naturopathic medicine to the field of cancer care and treatment. Naturopathic oncologists work both in hospital oncology settings and in private practices, bringing their wisdom, perspective and experience to aid oncology treatment teams that seek the best positive outcomes for their patients. <https://oncanp.org/what-is-naturopathic-oncology/>



# FABNO

- Naturopathic physicians who meet standards established for advanced experience and knowledge in cancer care are eligible for board certification in Naturopathic Oncology.
- Qualifying doctors whose applications are accepted must pass stringent examinations in order to be awarded the status of Fellow by the American Board of Naturopathic Oncology.
- Examinations demonstrate competence in both naturopathic and conventional oncology. These naturopathic physicians meet the highest standard of the profession as specialists in naturopathic oncology.



IOS

Integrative  
Oncology Support





# 5 Foundations of Integrative Oncology Support



**Strengthen** immune system function to fight cancer.



**Fight** cancer cells directly using diet, nutrients and treatments.



**Potentiate** conventional therapies using diet, nutrients and treatments.



**Decrease** negative side effects you may experience from conventional oncology therapies.



**Support** immune system function and related organ systems for optimal health.



# 3 Components of Integrative Oncology Support



## Dietary Therapy

Proper diet is crucial for altering the terrain in the body to impede cancer cell growth and boost immune system function.



## Nutritional Supplements

Many nutrients have been shown to have anti-cancer mechanisms, and can help improve outcomes of conventional treatments such as chemotherapy and radiation.



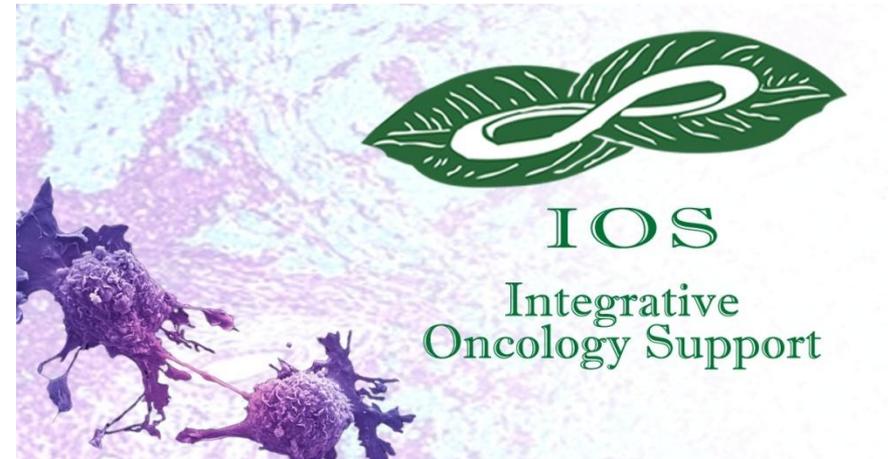
## Treatments

Cutting-Edge Treatments for cancer care & managing side effects:  
Intravenous Vitamin C  
Hyperbaric Oxygen  
Hyperthermia



# Evidence Based

- Our proprietary database of natural substances for cancer currently contains over 32,000 articles from the conventional medical literature.
- Each is sorted according to cancer type and nutrient.



- **Breast Cancer and Curcumin - 327 articles**  
**Prostate Cancer and Green Tea - 254 articles**  
**Colon Cancer and Quercetin - 196 articles**  
**And constantly growing.....**



# Treatments for Desmoid

- Not much directly



# Managing Side Effects

- **MANY** options



# Neuropathy – Calcium, Magnesium

- M. W. (2004). "Oral Calcium Ameliorating Oxaliplatin-Induced Peripheral Neuropathy." J Appl Res 4(4): 576-582.

...We report a case of a patient, in which oral calcium supplements not only were successful in treating his neurotoxicity, but we also were able to administer a cumulative dose of 2500 mg/m<sup>2</sup> (990 mg/m<sup>2</sup> with oral calcium)....Future studies to evaluate the role of oral Ca/Mg are warranted, since they could prove to be an effective, less expensive and more convenient way to treat and prevent oxaliplatin-associated toxicity.\*

Cersosimo, R. J. (2005). "Oxaliplatin-associated neuropathy: a review." Ann Pharmacother 39(1): 128-135.

"... Calcium and magnesium solutions are an effective and convenient means of treating and reducing the severity of neuropathic symptoms. Additional studies, including controlled trials, are needed to determine the best way to prevent and treat this complication."\*



# Neuropathy – Glutamine

- Amara, S. (2008). "Oral glutamine for the prevention of chemotherapy-induced peripheral neuropathy." *The Annals of pharmacotherapy* 42(10): 1481-1485.  
"...Glutamine is a nonessential amino acid that is thought to have a neuroprotective role, possibly due to the upregulation of nerve growth factor. Two studies revealed that oral glutamine was effective in reducing peripheral neuropathy associated with high-dose paclitaxel, as evidenced by a reduction in numbness, dysesthesias, and motor weakness, as well as a smaller loss of vibratory sensation. Another study found that glutamine effectively reduced peripheral neuropathy in patients with colorectal cancer being treated with oxaliplatin, thereby decreasing the need for an oxaliplatin dose reduction. ...\*



# Neuropathy – EFAs

- Ghoreishi, Z., et al. (2012). "Omega-3 fatty acids are protective against paclitaxel-induced peripheral neuropathy: a randomized double-blind placebo controlled trial." BMC Cancer 12: 355.

BACKGROUND: Axonal sensory peripheral neuropathy is the major dose-limiting side effect of paclitaxel. Omega-3 fatty acids have beneficial effects on neurological disorders from their effects on neurons cells and inhibition of the formation of proinflammatory cytokines involved in peripheral neuropathy.

METHODS: This study was a randomized double blind placebo controlled trial to investigate the efficacy of omega-3 fatty acids in reducing incidence and severity of paclitaxel-induced peripheral neuropathy (PIPn)...RESULTS: Twenty one patients (70%) of the group taking omega-3 fatty acid supplement (n = 30) did not develop PN while it was 40.7% ( 11 patients) in the placebo group(n = 27). A significant difference was seen in PN incidence (OR = 0.3, .95% CI = (0.10-0.88), p = 0.029).

...CONCLUSIONS: Omega-3 fatty acids may be an efficient neuroprotective agent for prophylaxis against PIPn.\*



# Neuropathy – Carnitine

- L-Carnitine has been shown to significantly increase lean body mass and appetite as well as decrease fatigue in cancer patients.\*

Pisano, C., et al. (2003). "Paclitaxel and Cisplatin-induced neurotoxicity: a protective role of acetyl-L-carnitine." *Clin Cancer Res* 9(15): 5756-5767.

...RESULTS: ALC cotreatment was able to significantly reduce the neurotoxicity of both cisplatin and paclitaxel in rat models, and this effect was correlated with a modulation of the plasma levels of NGF in the cisplatin-treated animals. Moreover, experiments in different tumor systems indicated the lack of interference of ALC in the antitumor effects of cisplatin and paclitaxel.

...CONCLUSION: In conclusion, our results indicate that ALC is a specific protective agent for chemotherapy-induced neuropathy after cisplatin or paclitaxel treatment without showing any interference with the antitumor activity of the drugs.\*



# Neuropathy – Glutathione

- Visovsky, C., et al. (2007). "Putting evidence into practice: evidence-based interventions for chemotherapy-induced peripheral neuropathy." *Clin J Oncol Nurs* 11(6): 901-913.  
"...may prevent neurotoxicity induced by platinum compounds by hampering the initial accumulation of platinum adducts in the dorsal root ganglia (Ocean & Vahdat, 2004). Three studies testing the potential neuroprotective effects of glutathione have been published."

\*



# Neuropathy – Vitamin E

- Argyriou, A. A., et al. (2006). "A randomized controlled trial evaluating the efficacy and safety of vitamin E supplementation for protection against cisplatin-induced peripheral neuropathy: final results." Support Care Cancer 14(11): 1134-1140.  
... RESULTS: The incidence of neurotoxicity differed significantly between groups, occurring in 3/14 (21.4%) of patients assigned to the vitamin E supplementation group and in 11/16 (68.5%) of controls (p=0.026). The relative risk (RR) of developing neurotoxicity was significantly higher in case of controls, RR=2.51, 95% C.I.=1.16-5.47. Mean PNP scores were 4.99+/-1.33 for patients of group I and 10.47+/-10.62 for controls, (p=0.023)...CONCLUSION: Vitamin E effectively and safely protects patients with cancer from occurrence of cisplatin neurotoxicity.\*



# Neuropathy – Ginkgo

- Schroder, S., et al. (2013). "Can medical herbs stimulate regeneration or neuroprotection and treat neuropathic pain in chemotherapy-induced peripheral neuropathy?" Evid Based Complement Alternat Med 2013: 423713.  
"...Oztürk et al. investigated Ginkgo biloba alcoholic extract in cisplatin-induced peripheral neuropathy in mice [86]. Development of neuropathy was evaluated with changes in sensory nerve conduction velocity (NCV) and Ginkgo biloba extract prevented reduction in NCV. In another study a Ginkgo biloba extract prevented some functional and morphological deteriorations induced by cisplatin, antagonizing the decrease in the number of migrating cells and in the length of outgrowing axons [86]. Marshall et al. investigated retrospectively 17 patients with colorectal cancer who received oxaliplatin along with Ginkgo biloba extract, but no specification of the extraction method was provided in the published abstract. The researchers found that 11 of the 17 patients developed a grade 1 peripheral neuropathy (PN) after the first cycle of oxaliplatin. Five of six patients who received Ginkgo biloba after the second cycle of oxaliplatin reported decreased intensity and duration of sensory PN. No Ginkgo biloba related side effects have been observed. The data suggested that Ginkgo biloba extract appears to attenuate the intensity and duration of acute dysesthesias caused by oxaliplatin and may yield synergistic antitumor activity [87]. .\*



# Neuropathy – ALA

- Gedlicka, C., et al. (2002). "Effective treatment of oxaliplatin-induced cumulative polyneuropathy with alpha-lipoic acid." J Clin Oncol 20(15): 3359-3361.  
...Alpha-lipoic acid (Thioctacid; Asta Medica, Frankfurt, Germany), which has been shown to be effective in both somatic and autonomic neuropathies in diabetes, normalizes endoneural blood flow, reduces oxidative stress, and improves vascular dysfunction.<sup>4,5</sup> In a placebocontrolled trial of symptomatic diabetic polyneuropathy, a significant relief of neuropathic symptoms was observed in patients who received alpha-lipoic acid.<sup>6</sup> ...Our data suggest that alpha-lipoic acid 600 mg given intravenously once a week for 3 to 5 weeks followed by 600 mg three times a day orally is able to counteract cumulative oxaliplatin-related PNP; in eight (53%) out of 15 patients who received alpha-lipoic acid, the severity of this dose-limiting oxaliplatin-related side effect could be effectively reduced. \*



# Radiation – Quercetin

- Lin, C., et al. (2011). "Combination of quercetin with radiotherapy enhances tumor radiosensitivity in vitro and in vivo." *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology*.

PURPOSE: ...multifunctions on immune function, anti-oxidation, anti-viral, anti-inflammatory, and cardiovascular protection. ...RESULTS: We found that quercetin can significantly increase tumor radiosensitivity both in vitro and in vivo... The mean doubling time of tumor xenografts was significantly increased in irradiated mice treated with quercetin. At the cellular level, exposure to quercetin resulted in prolonged DNA repair...CONCLUSION: We demonstrate both in vitro and in vivo evidence that combination of quercetin with radiotherapy can enhance tumor radiosensitivity by targeting the ATM-mediated pathway in response to radiation.



# Radiation – Propolis

- Orsolic, N. and I. Basic (2005). "Antitumor, hematostimulative and radioprotective action of water-soluble derivative of propolis (WSDP)." *Biomed Pharmacother* 59(10): 561-570.

...a water-soluble derivative of propolis (WSDP) in the treatment of various cytopenias induced by radiation and/or chemotherapy... WSDP (50 or 150 mg/kg) exerted a significant antimetastatic effect ( $P < 0.001$ ) when given either before or after tumor cell inoculation. In combined treatment WSDP and Epirubicin profoundly inhibited metastasis formation; this synergistic effect is maximal when Epirubicin and WSDP were administered after tumor cell inoculation. Positive outcome of combined treatment with WSDP and Epirubicin was also found regarding the number of red and white blood cells in peripheral blood while in mice treated with Epirubicin alone the significant drop in all hematological parameters was noticed on day 13 after tumor cell inoculation. ...To conclude, these findings indicate that the combination of WSDP with chemotherapeutics could increase the antimetastatic potential of chemotherapeutic agents; these findings suggest the benefits of potential clinical trials using WSDP combined with chemotherapeutic agents in order to maximize their antitumor activity and minimize postchemotherapeutic or radiotherapeutic deteriorated reactions.



# Radiation – Melatonin

- Wang, Y. M., et al. (2012). "The efficacy and safety of melatonin in concurrent chemotherapy or radiotherapy for solid tumors: a meta-analysis of randomized controlled trials." *Cancer Chemother Pharmacol*.

BACKGROUND...we performed a systematic review of randomized controlled trials (RCTs) of melatonin in solid tumor cancer patients and observed its effect on tumor remission, 1-year survival, and side effects due to radiochemotherapy.

...RESULTS...The dosage of melatonin used in the 8 included RCTs was 20 mg orally, once a day. Melatonin significantly improved the complete and partial remission (16.5 vs. 32.6%; RR = 1.95, 95% CI, 1.49-2.54;  $P < 0.00001$ ) as well as 1-year survival rate (28.4 vs. 52.2%; RR = 1.90; 95% CI, 1.28-2.83;  $P = 0.001$ ), and dramatically decreased radiochemotherapy-related side effects including thrombocytopenia (19.7 vs. 2.2%; RR = 0.13; 95% CI, 0.06-0.28;  $P < 0.00001$ ), neurotoxicity (15.2 vs. 2.5%; RR = 0.19; 95% CI, 0.09-0.40;  $P < 0.0001$ ), and fatigue (49.1 vs. 17.2%; RR = 0.37; 95% CI, 0.28-0.48;  $P < 0.00001$ ). Effects were consistent across different types of cancer. No severe adverse events were reported.

CONCLUSIONS: Melatonin as an adjuvant therapy for cancer led to substantial improvements in tumor remission, 1-year survival, and alleviation of radiochemotherapy-related side effects.



# Radiation – Melatonin

- Seely, D., et al. (2012). "Melatonin as adjuvant cancer care with and without chemotherapy: a systematic review and meta-analysis of randomized trials." *Integr Cancer Ther* 11(4): 293-303.

BACKGROUND: Melatonin (MLT) is known to possess potent antioxidant, antiproliferative, immune-modulating, and hormone-modulating properties...The authors systematically reviewed the effects of MLT in conjunction with chemotherapy, radiotherapy, supportive care, and palliative care on 1-year survival, complete response, partial response, stable disease, and chemotherapy-associated toxicities...RESULTS: ...The pooled relative risk (RR) for 1-year mortality was 0.63 (95% confidence interval [CI] = 0.53-0.74;  $P < .001$ ). Improved effect was found for complete response, partial response, and stable disease with RRs of 2.33 (95% CI = 1.29-4.20), 1.90 (1.43-2.51), and 1.51 (1.08-2.12), respectively. In trials combining MLT with chemotherapy, adjuvant MLT decreased 1-year mortality (RR = 0.60; 95% CI = 0.54-0.67) and improved outcomes of complete response, partial response, and stable disease; pooled RRs were 2.53 (1.36-4.71), 1.70 (1.37-2.12), and 1.15 (1.00-1.33), respectively. In these studies, MLT also significantly reduced asthenia, leucopenia, nausea and vomiting, hypotension, and thrombocytopenia.



# Radiation – Berberine

- Li, G.-h., et al. (2010). "Berberine inhibits acute radiation intestinal syndrome in human with abdomen radiotherapy." *Medical oncology* (Northwood, London, England) 27(3): 919-925.

Radiation-induced acute intestinal symptoms (RIAISs) are the most relevant complication of abdominal or pelvic radiation...Patients with abdominal/pelvic radiation in the control group showed grade 1 fatigue, anorexia/nausea, colitis, vomiting, proctitis, weight loss, diarrhea and grade 2 anorexia/nausea, fatigue. Only grade 1 colitis, anorexia/nausea, and fatigue were seen in patients of abdominal radiation treated with berberine. Grade 1 fatigue, colitis, anorexia/nausea, and proctitis occurred in patients of pelvic radiotherapy treated with berberine. Pretreatment with berberine significantly decreased the incidence and severity of RIAIS in patients with abdominal/pelvic radiotherapy when compared with the patients of the control group ( $P < 0.05$ ). RIAIS were reduced in patients with abdominal radiotherapy/pelvic radiation after receiving berberine treatment. Berberine significantly reduced the incidence and severity of RIAIS and postponed the occurrence of RIAIS in patients with abdominal or whole pelvic radiation.



# Radiation – Probiotics

Mego, M., et al. (2013). "Probiotic bacteria in cancer patients undergoing chemotherapy and radiation therapy." *Complement Ther Med* 21(6): 712-723.

...Probiotics by their properties may help strengthen homeostasis and thus reduce side effects associated with cancer treatment. Experimental evidence suggests that probiotics might have beneficial effect on the toxicity of anticancer therapy...RESULTS: Probiotics might have beneficial effects on some aspects of toxicity related to anticancer treatment especially radiation therapy...



# Radiation – Probiotics

Viaud, S., et al. (2013). "The intestinal microbiota modulates the anticancer immune effects of cyclophosphamide." *Science* 342(6161): 971-976.

... these bacteria stimulate the generation of a specific subset of "pathogenic" T helper 17 (pT(H)17) cells and memory T(H)1 immune responses. Tumor-bearing mice that were germ-free or that had been treated with antibiotics to kill Gram-positive bacteria showed a reduction in pT(H)17 responses, and their tumors were resistant to cyclophosphamide....These results suggest that the gut microbiota help shape the anticancer immune response.



# Radiation – Probiotics

Iida, N., et al. (2013). "Commensal bacteria control cancer response to therapy by modulating the tumor microenvironment." *Science* 342(6161): 967-970.

The gut microbiota influences both local and systemic inflammation. Inflammation contributes to development, progression, and treatment of cancer... disruption of the microbiota impairs the response of subcutaneous tumors to CpG-oligonucleotide immunotherapy and platinum chemotherapy. In antibiotics-treated or germ-free mice, tumor-infiltrating myeloid-derived cells responded poorly to therapy, resulting in lower cytokine production and tumor necrosis after CpG-oligonucleotide treatment and deficient production of reactive oxygen species and cytotoxicity after chemotherapy. Thus, optimal responses to cancer therapy require an intact commensal microbiota that mediates its effects by modulating myeloid-derived cell functions in the tumor microenvironment. These findings underscore the importance of the microbiota in the outcome of disease treatment.\*



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