

Dietary Supplements used concurrently with Conventional Treatment – A Methodology for Prevention of Interactions



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INTRODUCTION

It is estimated that 40 to 65 percent of oncology patients take dietary supplements during their conventional treatment for cancer. A methodology is presented for selection of dietary supplement interventions which balances symptom management, level of evidence, and patient safety.

DESCRIPTION

The use of evidence-based dietary supplements has the potential to significantly improve the quality of life of patients undergoing cancer treatment. However, as compared to other complementary approaches, botanical medicines have a significantly higher risk for drug interactions, and should be evaluated much more critically. Combined use of herbs and chemotherapy/oncologic agents may increase or decrease the effects of either substance, leading potentially to greater toxicity or treatment failure. In the absence of objective data demonstrating no decrease in chemotherapy effectiveness, botanical medicines reported to reduce chemotherapy side effects should be applied clinically with great caution.

A practical methodology to incorporate botanical medicines while reducing the risk of herb-drug interactions includes:

1. Review all medications and supplements, including chemotherapy/oncologic agents and all pre- and post-medications.
2. Determine patient's rationale and motivation for taking herbal products.
3. Evaluate all supplements against all medications and chemotherapy.
4. Use online drug references for all medication and chemotherapy drug metabolism information (e.g., epocrates.com), as the information changes and a reliable source needs to be utilized that is updated frequently.
5. Establish the possibility of any herb-drug interactions. Use online resources (e.g., naturaldatabase.therapeuticresearch.com) as information changes rapidly. Determine if:
 - a. the medication or chemotherapy is metabolized via a CYP 450 isoenzyme, p-glycoprotein, or another pathway,
 - b. the herb induces or inhibits a CYP 450 isoenzyme, and any other interaction is possible (interfering with p-glycoprotein, the mechanism of action of the drug, or another component of drug metabolism, such as glucuronosyltransferases).
6. If the desired botanical supplement may be contra-indicated due to potential interactions, consider other complementary interventions to achieve a similar outcome.
7. Note that if no interactions have been reported or if conflicting data exist, there may still risk of an herb-drug interaction, and caution should be exercised.

For non-botanical dietary supplements (where the risk of drug interactions is lower), the following should be taken into account:

1. Are there any known drug interactions?
2. Is the supplement indicated?
3. Is there evidence to support effectiveness?
4. Is the dose appropriate?

Table 1. Mechanisms of Herb-Drug Interactions

Mechanism of Interaction	Example of Interaction	Representative Herb
Induction and inhibition of metabolic enzymes	CYP isoenzymes	St. John's Wort
Inhibition and induction of transport and efflux proteins	P-glycoprotein	Curcumin
Alteration of GI functions	Decreasing GI transit time	Cascara
Alteration of renal elimination	Pseudoalderstone-like effect	Licorice
Pharmacodynamic synergy, addition, and antagonism	Estrogenic effect	Dong quai
Inhibition of glucuronidation enzymes	UDP-glucuronosyltransferase (UGT) enzymes	Milk thistle

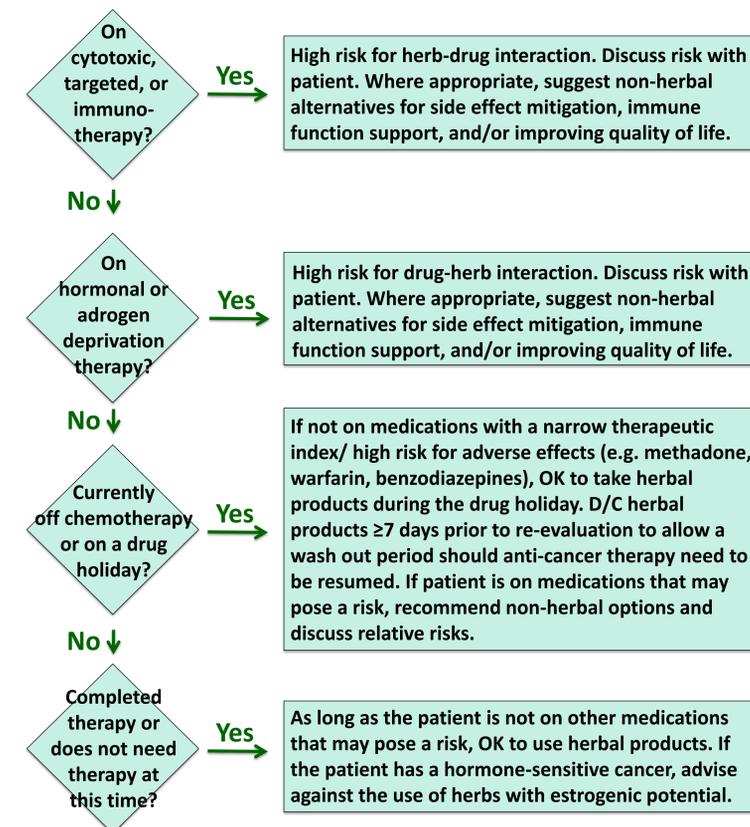
Table 2. Patient Rationales and alternatives

Patient Rationale for Taking an Herbal Product	Integrative Medicine Option Instead of Herbal Products	Reference
Fatigue, Depression, Improving Quality of Life	Exercise, acupuncture	1,2
Pain, Well-Being	Acupuncture (as well as appropriate pain management)	3
Insomnia, Anxiety, Mood	Mind-Body Therapies (Biofeedback, Meditation, Tai Chi, Art, and Music Therapy)	4
Hot Flashes and Menopausal Symptoms	Yoga, Magnesium	5,6
Immune Support	Stress Management, Relaxation Practice	7

CONCLUSIONS

Educating both patients and caregivers about the risk for interactions between botanicals, other dietary supplements, and pharmaceuticals, and providing effective non-drug alternatives can foster the opportunity for more open dialog and shared decision-making. Given the potential risks associated with herb-drug interactions, this simplified decision-making framework can provide clinicians with an effective and efficient approach to managing this dialogue.

Fig. 1. Clinical Approach For Herbal Products



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