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The top 6 alternative products

What every pharmacy technician needs to know

By Ian Lloyd, B.Sc. (Pharm.) and pharmacy technicians Minoo Babri-Terani, Kyle Marshall and Kelly Shera

Statement of objectives

Upon successful completion of this lesson, the technician should be able to:

1. Understand the common use(s) of six popular alternative products.
2. Understand the most common side effects and drug interactions of these products.
3. Recognize when a patient should be referred to a pharmacist for more information about possible contraindications.

Introduction

One of the many ways a technician can assist the pharmacist is to act as a liaison between the patient and the pharmacist. Knowledge about the use of alternative products and their adverse effects and/or interactions will enable the technician to recognize situations where a pharmacist's knowledge is necessary. Technicians can ensure that the patient has the opportunity to interact with the pharmacist.

This lesson will provide a brief introduction to six common alternative products, and review issues that will assist the technician in recognizing situations that require referral to a pharmacist.

The use of alternative products is not without controversy and risk. Natural health advocates believe these products have gentle efficacy, are safe and have a long history of traditional use in other countries. In many cases these advocates are correct. Skeptics argue that

while some products appear to be effective, traditional safety cannot be applied to modern concentrated formulations. They also point to a lack of standardization, industry regulation, and scientific data on their effectiveness, adverse reactions and interactions with prescription medications. These points are also correct. This is why it is important to refer patients to the pharmacist if they have any questions about natural alternative products. Only the pharmacist can determine if the risk of using an alternative product is worth the potential benefit.

Another risk associated with natural health products is self-diagnosis and self-medication by patients. Many conditions (such as high blood pressure, depression, infections) can become quite severe if treated improperly. Any patient who may be self-medicating a potentially serious medical condition should be referred to the pharmacist or their physician.

1. Glucosamine/chondroitin

These are the most commonly asked about supplements available in Canadian pharmacies.¹ These products are promoted, separately or together, to help treat the symptoms of osteoarthritis. Osteoarthritis refers to the degeneration of the weight-bearing joints and is sometimes called "wear-and-tear" arthritis; it is not to be confused with rheumatoid arthritis, which is an autoimmune disease. Glucosamine sulfate (GLS) is a naturally occurring aminosugar and is one of the raw materials used by the body to make synovial fluid, tendons, nails and cartilage.² Chondroitin (CD) is a large molecule of many glycosaminoglycans. Besides providing material for joint rebuilding as GLS does, CD is also believed to have an anti-inflammatory and a joint-protective effect.³ Some clinical evidence indicates that glucosamine may provide pain relief as well as slow the progression of osteoarthritis,⁴ but other data

suggest that the product is no more effective than placebo.⁵ Further research is needed to determine an exact mechanism of action.

The suggested dosage for GLS is 500 mg three times a day, and 400 mg three times a day for CD.^{2,3} With both supplements, at least 4-6 weeks of continuous use may be needed before determining its efficacy. The most common side effect for GLS appears to be mild stomach upset.⁶ A new concern with GLS use is possible insulin resistance. There have been unpublished case reports, which are partially supported by animal studies and human tissue culture data.⁷ It appears that continuous GLS supplementation may decrease glucose uptake, increase glycogen formation and increase insulin resistance.² Until more is known, people with diabetes should use this product with caution. The technician can play an important role in making sure all patients with diabetes who are purchasing GLS have an opportunity to speak with the pharmacist.

Patients will also ask if GLS or CD is effective for rheumatoid or other forms of arthritis. There is little evidence to support the use of GLS/CD for anything other than osteoarthritis.

2. Echinacea

Echinacea is the second most asked about alternative product in Canadian pharmacies.¹

It is mainly promoted to help stimulate the immune system to fight off colds and flu. Extracts of echinacea exert several actions on the body's immune system: increasing phagocytosis, increasing production of interferon and interleukins, increasing production of white blood cells and other non-specific immuno-stimulatory actions.^{8,9}

It is believed that these stimulatory effects on the immune system help the body fight off colds and flu. One study found that it was not effective in helping to prevent colds or flu.¹⁰ Echinacea extracts do have some direct antibacterial properties; however, this is not considered to be significant.^{8,9}

The suggested dosage of echinacea varies depending on the dosage form used. The usual recommended dose is the equivalent of 1-2 g of the dried herb three times a day. This product works best when taken at the first sign of a cold.

There have been no documented cases of drug interactions with echinacea products.⁹ Due to its stimulation of the immune system, this herb directly opposes the effects of immunosuppressants.⁹ Therefore, it is generally considered to be contraindicated in certain diseases, such as rheumatoid arthritis, tuberculosis and multiple sclerosis. No clinical evidence or case reports support this to date.

Echinacea is also consid-

ered to be contraindicated in AIDS and HIV patients.^{11,12} It was once thought that echinacea was contraindicated during pregnancy, but one prospective study of women who took echinacea during their pregnancy showed no adverse events.¹³ This is preliminary evidence and echinacea should be avoided during pregnancy until more is known. People with allergies to ragweed, daisies or sunflowers may experience mild allergic symptoms while taking echinacea products.¹⁴

When people are choosing this product, there are many warning signs to look for. Any patient with cold or flu symptoms that last longer than 5-7 days should be brought to the attention of the pharmacist. Echinacea may interact with medications for tissue transplants, or autoimmune diseases and immunosuppressant medications (e.g., cyclosporine, azathioprine). Therefore, technicians should ask patients if they are taking any medications and these patients should be referred to the pharmacist for more information.

3. St. John's wort

Popular media have made this the third most asked about alternative product.¹ Extracts of St. John's wort (*Hypericum perforatum*) are used primarily to treat mild to moderate depression.¹⁵ Depression may be related to low levels of certain brain neurotransmit-

ters. The prevention of the reuptake of these neurotransmitters is thought to help relieve the symptoms of depression. The mechanism of action for SJW is not quite clear; however, studies have suggested that this botanical may inhibit the reuptake of neurotransmitters (serotonin and norepinephrine), and inhibit monoamine oxidase and catechol-*O*-methyltransferase.^{9,11,12}

This herb has demonstrated the ability to prolong narcotic-induced sleeping time and reduce barbiturate-induced sleeping times.^{12,15} Due to the inhibition of serotonin reuptake, it is advisable to avoid SJW use while taking SSRIs (selective serotonin reuptake inhibitors such as sertraline, fluoxetine, etc.) or NSRIs (noradrenaline/serotonin reuptake inhibitors such as venlafaxine).^{9,11,12}

SJW has been found to induce the cytochrome P-450 CYP3A enzyme and this can cause significant drug interactions.¹⁶ There have also been reports that it might interfere with oral contraceptives, digoxin, warfarin and theophylline.¹⁷ Two reports showed that SJW extracts reduced blood levels of cyclosporine;¹⁸ one small study showed that SJW reduced blood levels of the HIV protease inhibitor indinavir.¹⁹ Anyone considering taking any medications and SJW together should consult the pharmacist first to ensure there are no interactions.

The suggested dosage for SJW is 300 mg three times a day (standardized to 0.3% hypericin) for mild to moderate depression. The upper limit is 1,800 mg per day. The most common side effects of SJW use include mild stomach upset, allergic reactions (photosensitivity rash), restlessness and fatigue.³²

Depression can be a serious medical condition and should not be treated without

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consulting a physician. Since SJW can interact with many prescription medications, these patients are at risk of developing complications. It is wise for the technician to refer any patient taking SJW to the pharmacist.

4. Ginkgo

Evidence suggests that *Ginkgo biloba* extract (GBE) may be helpful in the treatment of dementia, memory loss²⁰ and intermittent claudication.²¹ Early evidence has shown some promise in ginkgo's ability to treat tinnitus (ringing in the ears), sexual dysfunction, altitude sickness, PMS, vertigo and depression. Perhaps the most popular use for GBE is for memory enhancement.²²

It is believed that GBE stimulates the release of endothelium-derived relaxing factor (EDRF), causing vasodilation. GBE is also an inhibitor of platelet-activating factor (PAF), which plays a role in the formation of blood clots. Through these processes, GBE may improve circulation throughout the body, including the brain and legs. This herbal may also be helpful in increasing the neurochemicals associated with memory.²³ A recent review assessing the risk-benefit of commonly used herbs concluded that ginkgo is of questionable value for memory loss or tinnitus, but has some beneficial effects on dementia and intermittent claudication.²⁴

GBE usually has few side effects. Those reported include headache, stomach upset, insomnia, nausea, dizziness and allergic reactions. These allergic reactions may be due to the presence of ginkgolic acids, which are similar compounds to the allergens found in poison ivy.²⁵ Its safety in pregnancy and lactation has not been established.⁹

Many authors caution that GBE may enhance the effects of anticoagulants.^{9,12,26} Some case reports exist that show

ginkgo products causing bleeding complications when taken alone,²⁷ and when taken with acetylsalicylic acid (ASA)²⁸ or ticlopidine.²⁹ For this reason, patients should be warned about the possible impact that GBE may have on their anti-coagulant therapy. The technician can help identify patients buying ginkgo and blood thinning products such as warfarin and ASA.

5. Ginseng

Ginseng is a popular herbal product in Canadian pharmacies with sales of \$7.1 million in 1998.³⁰ The ginsengs are used for their ability to help combat stress and fatigue, and to increase athletic performance.^{8,31} Many argue that there are few human clinical studies to support ginseng use;⁸ however, it has been widely used in Asia for many years.^{9,32} Panax or Asian ginseng (*Panax ginseng*), Canadian/American ginseng (*Panax quinquefolius*) and Siberian ginseng (*Eleutherococcus senticosus*) are sometimes lumped together. All three are unique. Siberian ginseng, also referred to as eleuthero, is not a true ginseng. It is in the same *Araliaceae* family of plants as the true ginsengs and its energizing effects are similar.

Ginseng and eleuthero have few side effects. The most common side effect with all ginseng use is insomnia. Less commonly reported are symptoms of nervousness, diarrhea, breast tenderness and vaginal bleeding.³³ Despite these last two side effects, ginseng appears to have no estrogen-like activity. Eleuthero is better tolerated, but side effects of hypertension and insomnia are sometimes seen. In one clinical study, *Panax ginseng* had a hypoglycemic effect in diabetic patients.³⁴

Ginseng use may cause drug interactions and may conflict with certain medical conditions, such as high blood pressure or diabetes. The usual dose of ginseng is 1-4 g of the

root or 100-500 mg of the standardized extract (4-8% ginsenosides).³⁵ Eleuthero is taken at a dosage of 2-4 g of the root or 300-600 mg of extract daily.³⁶ All of these doses are best taken early in the day on an empty stomach.

Technicians can help identify patients who are taking ginseng to help improve their energy. A lack of energy can be caused by several conditions, such as hypothyroidism, anemia and other medical conditions. A consultation with a pharmacist can help to eliminate these concerns.

6. Garlic

Garlic (*Allium sativum*) is a member of the familiar family of plants called alliums. Onions, leeks and shallots also belong to this family. The most popular use for garlic preparations is to help treat hyperlipidemia and hypercholesterolemia. It is also used to a lesser extent to treat hypertension and for use as an antimicrobial.^{7,9,11,26} This botanical is generally considered safe when used for dietary purposes.^{12,26} Much of the interest regarding garlic has focused on one compound: a sulfur-containing amino acid called allicin. This is one of the compounds responsible for garlic's antimicrobial activity. It also happens to be responsible for its characteristic odour.

Others have focused their attention on another molecule called S-allyl cysteine (SAC). It is unclear which is responsible for the purported action of garlic. Many of the studies regarding garlic's therapeutic actions have used the brand name garlic products Kwai and Kyolic. Kwai is a product standardized to its allicin potential, and Kyolic is an "aged garlic extract" that claims to be high in SAC.

There can be side effects with garlic use, especially with doses higher than normally encountered in dietary consumption. Large doses of gar-

lic can cause indigestion and gas. Topical application can cause irritation and burn-like symptoms.³⁷ The suggested dose is 2-5 mg of allicin, or the equivalent of 4 g of fresh garlic.³⁸ Even though some garlic products claim to be odourless, they can still cause a garlic odour.³⁹

The most noted drug interaction with garlic involves its ability to enhance the action of anticoagulants. There are case reports detailing excessive post-operative bleeding in patients who had a high, chronic garlic intake.^{12,40,41} Garlic may also potentiate the anticoagulant effects of warfarin and ASA.⁹ One study notes garlic may interfere with existing diabetic management,⁴² possibly due to its hypoglycemic effect, which has been documented in animal studies.¹² Garlic has also been shown to decrease blood levels of saquinavir, a protease inhibitor used to treat HIV/AIDS.⁴³

Technicians can assist pharmacists by referring patients buying garlic, since this product may interact with several prescription drugs.

Conclusion

Technicians play a vital role by referring patients who take herbs to the pharmacist—helping both the patient and pharmacist. While it may be easy to identify herb/drug interactions, it may not be apparent what the significance is or how the interaction is best managed. A pharmacist is an excellent resource to solve these problems. The technician's accessibility, and ability to screen and refer patients, complements the pharmacist's drug and herbal knowledge. The pharmacist/technician team can be an exceptional combination for delivering pharmaceutical care.

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QUESTIONS

- One of the clinically important adverse effects of taking glucosamine is:
 - diarrhea
 - insomnia
 - insulin resistance
 - headaches
- Garlic may be modestly helpful in treating which condition?
 - diabetes
 - high cholesterol
 - premenstrual syndrome (PMS)
 - indigestion
- It is safe to take St. John's wort while taking other antidepressants such as fluoxetine and venlafaxine.
 - true
 - false
- Which statement describes the most appropriate use of echinacea?
 - Echinacea should be taken continually to avoid colds and flu.
 - Echinacea should be taken for 5-7 days, even if symptoms of a cold or flu have not improved or have worsened.
 - Echinacea is best taken at the first sign of a cold or flu.
- Which side effect is NOT associated with ginkgo use?
 - allergic reactions
 - headache
 - stomach upset
 - drowsiness
- The most common drug interaction with garlic involves which of the following?
 - potentiation of anticoagulants
 - decrease in the effectiveness of some antidepressants
 - increase in the absorption of estrogen
 - decreased effectiveness of antibiotics
- Glucosamine and chondroitin are primarily used to treat the symptoms of:
 - osteoarthritis
 - rheumatoid arthritis
 - osteoporosis
 - hyperlipidemia
- You should refer to the pharmacist a customer who is buying echinacea to treat a cold they have had for a week.
 - true
 - false
- What is the most notable drug interaction associated with ginkgo?
 - decreased effectiveness of high blood pressure medications
 - decreased effectiveness of blood thinning medications
 - enhanced action of blood thinning medications
 - decreased absorption of antidepressants
- St. John's wort is safe to use with which of the following medications?
 - birth control pills
 - warfarin
 - digoxin
 - sertraline
 - none of the above



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Please help ensure this program continues to be useful to you, by answering these questions.

- Do you now feel more informed about issues related to use of alternative products? Yes No
- Was the information in this lesson relevant to you as a technician? Yes No
- Will you be able to incorporate the information from this lesson into your job as a technician? Yes No N/A
- Was the information in this lesson ... Too basic Appropriate Too difficult
- How satisfied overall are you with this lesson? Very Somewhat Not at all
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