

ITP and Dietary Supplements

What You Need to Know

Grace Baek

*Department of Pharmacy, University of Washington,
Seattle, WA*

*Department of Pharmacy, Seattle Cancer Care Alliance,
Seattle, WA*

Heather Greenlee

*Integrative Medicine Program, Seattle Cancer Care Alliance,
Seattle, WA*

*Divisions of Public Health Sciences and Clinical Research,
Fred Hutchinson Cancer Research Center, Seattle, WA*

*Division of Medical Oncology, Department of Medicine,
University of Washington School of Medicine, Seattle, WA*

Cathy Taketa

*Department of Pharmacy, University of Washington,
Seattle, WA*

*Department of Pharmacy, Seattle Cancer Care Alliance,
Seattle, WA*

Dietary supplements, over-the-counter, herbal, vitamins, minerals, natural, alternative, complementary, integrative – does it seem like there are new terms being thrown at you every day? And do they all mean the same thing? The dietary supplement industry is a billion-dollar business with minimal FDA oversight.¹ Many companies may take advantage of confusing or ambiguous claims to claim your dollars. We have two goals for this article. The first is to provide some guidelines so you can make informed decisions on whether to use any of these products. The second goal is to review products commonly used by patients with immune thrombocytopenic purpura (ITP), and products that may be harmful to patients with ITP.

In 1994 the United States enacted the Dietary Supplement Health and Education Act (DSHEA) to help establish standards for consumer use.² The standards included definitions, guidance for manufacturers regarding dietary supplement claims, statements of nutritional support, ingredient labeling and nutrition information labeling, and manufacturing practices. Under DSHEA, the manufacturer does not need to apply for distribution or prove that their product is safe or works; the burden of proof is on the United States if a company does not adhere to DSHEA.

So how do you decide if a dietary supplement is right for you or not? Here are some questions to ask:

What is the risk versus benefit of using the product?

Risk versus benefit is essentially weighing the pros and cons of each option. If the pros outweigh the cons, then you may be willing to risk certain side effects of a medication to achieve the benefits.

Could the product be contaminated?

Contamination is the inadvertent presence of organisms or unintended material mixed into the medicine.

Could the product be adulterated?

Adulteration occurs when ingredients are added to a product and not listed on the label, thereby affecting the purity.

Which manufacturer and/or product is the best to use?

Look for products with a USP seal (United States Pharmacopoeia) or NSF seal (National Sanitation Foundation). These are reputable

organizations and the label indicates that the product has passed a test of quality assurance that ensures the product was properly manufactured, contains the listed ingredients on the label, and does not contain harmful levels of contaminants.

ITP is a bleeding disorder that involves the immune system getting confused and attacking platelets. Platelets help form a scab after a cut or bump. When the immune system destroys platelets there is risk of severe bleeding. Patients frequently ask about dietary supplements that may help boost the body's ability to make platelets. Immune-suppressing treatment may be recommended to treat ITP, which can increase risk of infections. Patients often seek ways to help the body fight off infections. Based on the interest to find ways to counteract ITP effects and treatment side effects, we have chosen to focus on common dietary supplements used to alleviate stress/fatigue, possible immune system-boosting effects, and increasing platelets.

The table on page 17 is based on available research and focuses on the most common formulations and is not meant to be a complete overview. Regrettably, the research on these supplements is quite limited with very few studies specifically with ITP patients. We have done our best to lay out what we know about these supplements, so that you may discuss the risks and benefits with your doctor. Keep in mind these supplements are also often sold in proprietary blends, meaning that manufacturers may not provide comprehensive information about doses of supplements. If plant-derived, they may not disclose the part of the plant that was used. This lack of information makes it difficult to call out specific formulations or a dose that would be harmful.



DIETARY SUPPLEMENTS

[¶] Selected benefits of supplements from Natural Medicines, an evidence-based database on supplements, unless otherwise noted. All benefits, unless otherwise noted, have not been found specifically for ITP patients. Because supplement doses range broadly, it is difficult to suggest a maximum dose that is safe to take.

COMMON SUPPLEMENTS		
Dietary Supplement	Possible Benefits[¶]	Possible Risks
Ashwaganda	Stress relief: A single center, prospective, double-blind, randomized, placebo-controlled trial found a decrease in stress and anxiety for some adults who took 300mg of ashwaganda extract by mouth twice daily for 60 days. ⁴	A few in vitro studies suggest that this supplement impacts how platelets can gather together, which can limit ability to stop bleeding after a cut or bruise. ^{5,6} For patients with ITP, this may be harmful in terms of increased risk of major bleeding. In addition, high doses of ashwaganda have been associated with liver damage. ⁷
Folic acid	Boost platelets: Folic acid deficiency may cause a drop in platelet counts, increasing risk for bleeding. ⁸ In one study, 9 of 14 ITP patients who received high doses of folic acid had a partial response or better. ⁹ For two patients, folic acid was helpful in increasing platelet count after a major bleed. ¹⁰	One hypothesis based on in vitro data suggests that high folate levels can make tumors grow quicker. However, in vivo data does not necessarily support this hypothesis. ¹¹
Vitamin C	Boost platelets: There have been mixed benefits seen with vitamin C with a handful of ITP patients in terms of returning platelet counts from low to normal. ¹²	As an antioxidant, vitamin C can interact with how some medications work and at high doses can possibly make therapies for ITP less effective. ¹³
Vitamin B Complex	Energy boost: B-vitamins have been shown to play a role in how intake is converted into energy, and low levels of B-vitamins have been associated with less-than-ideal brain health. ¹⁴ Boost platelets: In some cases, low B12 levels may contribute to low platelet counts; one case study showed that intensive vitamin B12 therapy for a child may have helped with a higher number of platelets. ^{15,16} (Therapy included an intramuscular vitamin B12 dose of 0.5 mcg/kg/day for 2 days, then 100 mcg/day for 2 days. This was followed by 1,000 mcg/day for 1 week, then 1000 mcg weekly for 1 month, followed by the same dose every month for 6 months.)	In contrast to a possible boost in platelets, there is some evidence suggesting vitamin B6 may impact how platelets can gather together, which can limit ability to stop bleeding after a cut or bruise. ¹⁷ For patients with ITP, this may be harmful in terms of increased risk of major bleeding.
Probiotics	Immune boost: A small, randomized, double-blind, placebo-controlled study showed that probiotics may help increase the positive impact of the flu vaccination. ¹⁸	The impact of probiotics on platelet count varies depending on the study. Some studies suggest no effect of some lactobacilli strains on how platelets can gather together. ^{19,20} A few small studies suggest the opposite, that probiotics can change the ability of platelets to gather together or be switched on. ^{21,22} For patients with ITP, this may be harmful in terms of increased risk of major bleeding. However, other limited evidence discusses the possibility that a higher platelet count is linked with fewer gut bacteria. ²³ Adding a probiotic would maybe increase gut bacteria.
Papaya leaf extract	Boost platelets: A handful of case studies in dengue fever patients suggest a possible platelet count-boosting effect of papaya leaf extract. ^{24,25} For patients with ITP, this may be helpful in terms of decreased risk of major bleeding. A study looking at the strength of all evidence currently available for this supplement and use in dengue fever was not able to decide if there was a benefit in terms of increasing platelets. ²⁶ In a few patients, adding on papaya leaf extract (doses ranged from two 5mL doses of aqueous papaya leaf extract on 3rd day of fever, to 25 mL of aqueous papaya leaf extract, twice daily for 5 days) on top of standard ITP treatments helped bring platelet counts to normal levels. ²⁷	One case has been reported of a hole forming in the esophagus after a patient consumed high amounts of a component of papaya leaf. ²⁸
Echinacea	Immune boost, Stress relief: In a few double-blind trials, quality of life was improved in healthy adults. Some in vitro studies have shown that echinacea compounds may help lessen the length and the intensity of cold symptoms and symptoms from upper lung infections. There are limited long-term benefits of echinacea. ²⁹ ¶	One patient has been reported to have experienced thrombotic thrombocytopenic purpura, or platelet clumps forming in smaller blood vessels throughout the body, after using Echinacea. ³⁰ Echinacea has been reported to act as an antioxidant, but one study found that echinacea was not much better than another antioxidant, resveratrol, at protecting proteins in platelets from damage. ³¹ For patients with ITP, this may be harmful in terms of risk of major bleeding. Echinacea also may impact how prescribed medications for ITP are broken down in the body. ¹⁸ This can mean increased risk for toxicities from prescribed medications, and in some cases chemotherapy. This supplement has also caused allergic reactions, especially for patients who are also allergic to related plants like ragweed. ¹⁹
Mushroom extracts [including Reishi and Active hexose correlated compound (AHCC)]	Energy boost: In vitro studies demonstrate that Reishi mushroom extract may act as an antioxidant, which could help with how our body is able to convert intake into energy. ^{32,33} Boost platelets: One child with ITP saw platelet numbers improve with 1.5 gm AHCC daily for an unknown period. ³⁴ For patients with ITP, this may be helpful in terms of bleeding. Doses of AHCC for various uses (from reducing chemotherapy side effects to diabetes) have been up to 9 gm AHCC total daily dose; the longest duration of 6 months. ³⁵ However, most reports do not cite a specific period of time that AHCC was taken, so a maximum lifetime dose of AHCC cannot be determined.	Reishi: A number of studies suggest that this supplement impacts how platelets can gather together, which can limit ability to stop bleeding after a cut or bruise. ^{36,37} For patients with ITP, this may be harmful in terms of increased risk of major bleeding. Although there may be possible anti-cancer benefit with some solid tumors, one in vivo study with reishi extract suggests that this supplement negatively impacts some cells that help fight off infection. ³⁸ Overall, an evidence-based supplement database suggests that this supplement is possibly safe when taken by mouth and for up to one year (not safe in powder form, longer than 1 month). ¶ AHCC: AHCC also may contribute to drug-supplement interactions. ³⁵ This can mean increased risk for toxicities from prescribed medications, and in some cases chemotherapy.
Panax or American ginseng	Immune boost: In vitro data suggest that multiple aspects of the immune system are helped by Panax ginseng. ³⁹ Studies looking at how this translates to outcomes for overall health are less common. A few studies in animals suggest that Panax ginseng at very high doses may help boost cells that mature into platelets; however, we do not have great evidence to suggest this benefit is the same for humans, and if so at what dose. ⁴⁰⁻⁴²	There is evidence in vitro and in vivo both for and against whether Panax ginseng impacts how platelets can gather together, which can impact ability to stop bleeding after a cut or bruise. ^{43,44} For patients with ITP, this may be harmful in terms of increased risk of major bleeding.

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