

CERTIFIED ADVANCED HERBALISM COURSE - SESSION 22: The Immune System

The immune system is the body's defense against germs, viruses and other invaders. The thymus gland, spleen, tonsils, adenoids and lymph nodes, along with a variety of white blood cells, all protect the body.



Common immune-system concerns include viruses, bacteria, fungus, cancer, fatigue, influenza, AIDS and stress. You can do a lot to keep your defenses strong and boost your immunity. The first step is making good dietary choices.

Examining the Immune System

Prevention is a fundamental principle of natural health. One of the best things you can do to prevent disease and disability is to support your immune system.

The immune system consists of various body organs and processes. Key structures include the thymus gland, spleen, tonsils, adenoids and lymph nodes. White blood cells also help defend the body.

This system is unlike other body systems in that it is not a group of physical structures (like the heart and blood vessels of the circulatory system), but a system of complex interactions involving many different organs, structures and substances. Among these are white blood cells, bone marrow, the lymphatic vessels and organs, specialized cells found in various body tissues, and specialized substances called serum factors that are present in the blood. Ideally, all of these components work together to protect the body against infection and disease.

The thymus gland plays a vital role in defending your body. It produces a special type of white blood cell called a T-lymphocyte. This unique cell plays a profound role in creating "cell-based" immunity. Immunity on a cellular level protects against fungi, viruses, bacteria and yeast infections. Your body has approximately one trillion lymphocytes.

The immune system helps protect us from malignancies. Tumor cells are always present in our bodies in small numbers. A healthy immune system will recognize and destroy tumor cells. When a person develops cancer, the immune function has failed to provide the body with protection. For some reason, the body does not recognize malignant cells, and they are allowed to reproduce.

After puberty, the thymus gland begins to shrink. Because the thymus is believed to be the source of hormones involved in the maturation of T-lymphocytes (discussed later), it is crucial that we supplement our diets with nutrients that nourish and build this gland. These include vitamin C with bioflavonoids, selenium, vitamin E, beta-carotene, zinc and alpha lipoic acid. Recent clinical data support the notion that many of us become zinc-deficient, as we grow older. This may help explain why elderly people become so much more susceptible to disease. Herbs that support the thymus gland include astragalus, echinacea and pau d'arco.

The lymphatic system, which includes the tonsils, adenoids and lymph nodes, is responsible for collecting lymph fluid and draining waste from the tissues. This fluid must be purified by white blood cells, which destroy infections, kill microorganisms and remove cellular waste. Our lymph nodes also help produce armies of antibodies, which are special cells designed to kill specific organisms. Herbs like ginseng, golden seal and echinacea help support and cleanse the lymphatic system. Regular exercise also promotes lymphatic system health.

The body's defense mechanisms are complex. In some cases, a virus must penetrate several lines of defense in order to cause a problem. Our defenses include the skin, mucous layers covering infection-susceptible tissues, white blood cells (or leukocytes) and interferon. Leukocytes are divided into two classes called granulocytes and agranulocytes. These two classes are further divided into smaller groups.

Granulocytes are primarily phagocytic, which means they have the ability to ingest particulate substances, a process called phagocytosis. Granulocytes include juvenile neutrophils, segmented neutrophils, basophils and eosinophils. Neutrophils neutralize bacteria and small particles by ingesting them. Basophils are believed to deliver anticoagulants to facilitate blood-clot absorption. Eosinophils increase in numbers with asthma and during certain infections.

The agranulocytes include monocytes and large and small lymphocytes. Monocytes can ingest large particles such as foreign proteins and peptides, while lymphocytes produce antibodies and are critical to cellular immunity.

Interferon is a protein that forms when cells are exposed to viruses. Uninfected cells will become immune to the virus when exposed to interferon. Interferon inhibits a virus's ability to reproduce.

If the body's ability to properly produce interferon or leukocytes is impaired, invading, disease-producing microorganisms may successfully challenge the health of the body. Weakening of the immune system results in increased susceptibility to virtually every type of illness. Some common signs of impaired immune function include fatigue, listlessness, repeated infections, inflammation, allergic reactions, slow wound healing, chronic diarrhea and infections that represent an overgrowth of some normally present organism such as oral thrush or yeast infections.

Type of Immunity

The human immune system is functional at birth, but immunity really develops as the body matures and learns to defend itself against different foreign invaders called antigens. The immune system has the ability to learn to identify and remember specific antigens that it has encountered. It does this through two basic means – cell-mediated immunity and humoral immunity.

In cell-mediated immunity, T-lymphocytes (or T-cells) identify and destroy cancerous cells, viruses and microorganisms like bacteria and fungi. These cells mature in the thymus gland – hence the “T” designation. Here they learn to recognize what is “self,” and therefore should be tolerated, and what is “non-self,” and therefore should be destroyed.

Humoral immunity involves the production of antibodies. These are not cells, but special proteins whose chemical structures form to match the surfaces of specific antigens. Antibodies concentrate in body fluids – tears, saliva, mucus, etc. – where they guard the entrances to the body. When they encounter their specific antigens, antibodies either damage the invasive cells or alert the leukocytes to attack.

Another group of white blood cells, the B-lymphocytes (manufactured by and matured in the bone marrow) produce the antibodies. When the B-lymphocyte meets a particular antigen, it engineers an antibody to match the antigen and stores a blueprint of the invader so it can initiate the production of antibodies in the case of any future exposure.

Key immune-boosting nutrients include vitamins A, C and B6, along with the minerals magnesium, selenium and zinc. The vast majority of people fail to get even Recommended Dietary Allowance levels of these nutrients from their diet, let alone optimal intakes. For this reason, supplementing with a high quality, comprehensive multivitamin is a proven way to boost your defenses. Vitamin C has antiviral properties and has proven successful against most viruses tested. The mineral zinc has been linked to the body's ability to resist viruses.

Immune System Analysis

If you have four or more of the following indications, you may consider nutritional aid to the immune system.

- Lack of energy
- Illness more than twice a year
- Difficulty digesting certain foods
- Food allergies
- Recent or frequent use of antibiotics
- Poor resistance to disease
- Belching or gas after meals
- Stressful lifestyle
- Sore or painful joints
- Difficulty in maintaining ideal weight
- Slow recovery from illness
- Exposure to air pollution daily
- Feeling out of control
- Food/chemical sensitivities
- Recurrent yeast/fungal infections

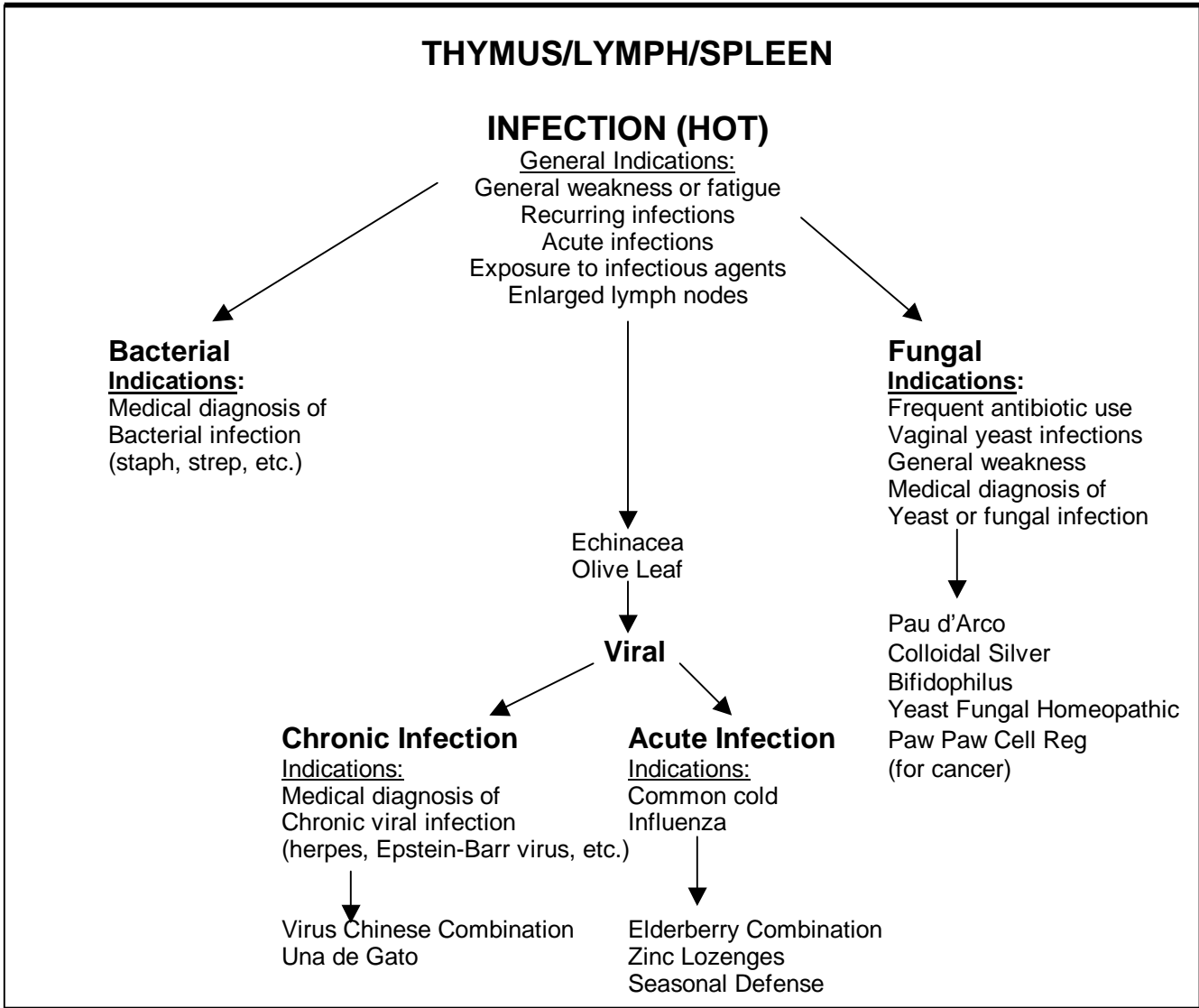
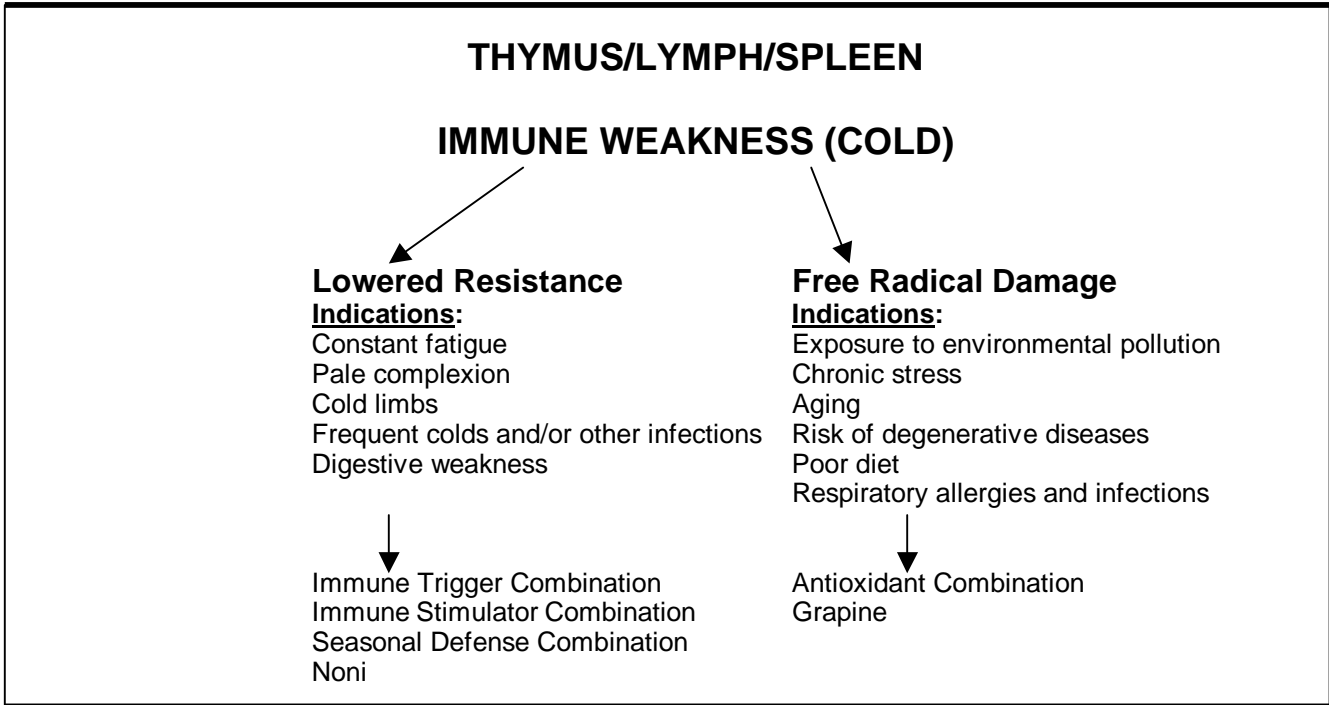
Immune System Suggestions

- Reduce stress
- Eat lots of fruit and vegetables
- Eat adequate complete proteins
- Avoid simple sugars
- Get adequate sleep and exercise

Immune System Products

The following products are listed with ingredients only as not to sell any particular product line. These ingredients can be purchased at any store you wish. If you are interested in the actual combinations listed below, please contact JLS directly.

- **Immune Defense Combination** – This combination is a convenient 14-day herbal food program containing nutrients that boost the immune system. This combination provides natural sources of vitamins A, C and E, plus selenium and zinc. Fight off the never-ending assault of poisons, toxins and other microscopic dangers.
- **Garlic** – This popular herb offers a boost to the immune system with its antibacterial, antifungal and antiviral properties.
- **Colloidal Silver** – Colloidal silver is an effective antimicrobial that inactivates the enzyme responsible for the multiplication of bacteria, fungi and viruses.
- **Echinacea** – Echinacea contains polysaccharides that stimulate the production of phagocytes (cells that engulf and consume foreign matter) and active T-lymphocytes, macrophages and natural killer cells. Taken at the earliest sign of a cold or infection, echinacea may help cut recovery time remarkable.
- **Olive Leaf** – Olive Leaf supports normal blood pressure and cholesterol levels and strengthens the immune system against viral and bacterial attacks.
- **Virus Chinese Combination** – This centuries-old blend of nine Chinese herbs helps you battle infection. This combination strengthens your kidneys, liver, stomach, blood and adrenals. It also helps detoxify and energize the body.
- **Una de Gato** – Una de gato provides beneficial alkaloids. Combined with astragalus and echinacea, this product gives your immune system the added boost it needs to keep you on your feet.
- **Elderberry Combination** – Recent research shows that elderberry, a plant long used to treat colds, possesses antiviral activity. This formula also includes echinacea, a popular immune stimulant, and royal jelly, a highly nutritious substance produced by bees.
- **Zinc Lozenges** – By combining zinc with echinacea and licorice root, the lozenges not only soothe the mouth and throat, they also provide added immune-system support and extra energy.
- **Pau d'Arco** – Pau d'Arco contains a chemical called Lapachol, which may provide nutritional support to the immune system. It is commonly used against many conditions of unwanted growth, including fungus, yeast and tumors.
- **Bifidophilus** – This probiotic supplement contains living organisms to help replace depleted bacteria that are necessary for proper immune function.
- **Immune Trigger Combination** – This formula contains astragalus and ganoderma. Astragalus functions much like echinacea, while ganoderma is similar to garlic. This combination enhances the body's ability to respond to forces that might otherwise weaken it.
- **Immune Stimulator Combination** – This combination contains polysaccharides, which promote macrophage activity. It contains nutrients that kill unfriendly microorganisms, viruses, bacteria, allergens, molds and parasites. It also increases immunoglobulin proteins in the intestinal tract to combat foreign invaders.
- **Antioxidant Combination** – This combination contains tocotrienols, lycopene and alpha lipoic acid in a base of rose hips, milk thistle and turmeric. Tocotrienols can penetrate the fatty membranes of cells, taking their antioxidant properties deep within the cells. Lycopene has been linked to prostate health. Alpha lipoic acid is both fat and water-soluble and can move through the entire cell, scavenging free radicals. Rose hips provide vitamin C, carotenoids and flavonoids for immune system support. Turmeric helps protect liver tissue and promotes healthy cholesterol levels.



CERTIFIED ADVANCED HERBALISM COURSE – SESSION 22 – QUESTION & ANSWERS

NAME: _____

ADDRESS: _____

PHONE: _____

FAX: _____

E-MAIL: _____

Please be sure to fill out the information above, complete the test and e-mail or fax it back to us at 425-955-4639 (US) or at +353 1 647 5705 (EU) or e-mail it to us at joyful@best.com (US) or at answers@med-herbs.com (EU). We will grade your question & answer session and will let you know if we have any questions or concerns.

1. Rent and watch the movie/cartoon "Osmosis Jones" by Warner Brothers Family Entertainment. Write a paper on what you learned from the movie and how it relates to this session.
2. What is the result of a weak immune system? _____
3. The body's defenses include mucous layers covering tissues, _____, interferon and _____.
4. What system includes the tonsils and adenoids and collects waste in a fluid that it drains from the tissues?
5. What are some indications that this system is weak and may need nutritional aid?
6. Who can I help? List five people who exhibit the above indications and who may benefit from nutritional aid to the immune system.
7. Experiment: Antioxidants scavenge free radicals and are often included in nutritional programs for patients with allergies, asthma and bronchitis. Free radicals are active atoms with an unpaired electron that bounce around until reacting with an object (such as a cell). This reaction damages the cell much the same way that rust affects metal (oxidation). Over time, body tissues deteriorate and many different ailments can occur. Antioxidants stop or slow this damage by protecting the cells against these unwanted free radical reactions. Follow these steps to visualize this antioxidant activity. Pour 3 oz. saline solution into each of two glass containers. Add 1 tablet of chewable vitamin C to one glass container. Then place 1 Efferdent (blue dye) tablet into each container. Observe the reaction for at least 30 minutes and note the changes in blue color in the different containers. The control (the container with no antioxidant) should lose its blue color. Notes: