## Dr. Dicken Weatherby's

# INSIDER'S GUIDE to Supporting Optimal Immune Function

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https://OptimalDX.com

# Contents

# Optimal Takeaways of Immune Support

In order to improve immune function you must first identify and remove any stressors that impact the immune system and then strengthen/support the weaknesses.

## *Stressors that impact and suppress the immune system*

These would include both external and internal influences. Some of the most important influences and suppressors of the immune system include:

1. Pharmaceutical drugs
2. Endogenous toxins (toxins from inside the body): bacterial toxins
3. Exogenous toxins (toxins from outside the body): food additives, artificial flavorings, food coloring, pesticides, plasticizers, insecticides, mercury and other heavy metals
4. Smoking
5. Sleep deprivation
6. Nutrient deficiencies: consuming nutrient deficient food leads to deficiencies of essential immune nutrients including:
    a. Vitamin A
    b. Vitamin C
    c. Vitamin B6
    d. Copper
    e. Iron
    f. Zinc
7. Consuming trans fats and rancid oils
8. Functional disturbances of the GI tract
    a. Abnormal Mucosal Barrier Function
        i. Intestinal hyperpermeability
        ii. Secretory IgA dysfunction
9. Intestinal dysbiosis: bacteria, yeast, fungus and parasites
10. Systemic infections: Viruses, bacteria, fungal and yeast infections
11. Poor genetics
12. Hormonal imbalance
13. Stress
14. Emotional and social factors
    a. Living alone

b. Physical or mental disability
c. Recent loss of a spouse or significant other
d. Use of multiple non-prescription and prescription medications
e. Poverty
f. Alcohol use

15. Liver toxicity: Poor detoxification and excretion
16. Exposure to radiation: microwaves, cell phones, radiation treatment for cancer
17. Dental infections

## *Basics of Supporting Immune System Function*

One of the best ways help your patients improve their immune system is to help them avoid suppressing it! Help them identify areas in their lifestyle that cause immune suppression. Avoiding immune suppression is critical to good health and it involves a comprehensive approach involving the following:

- ❑ Psychology- emotional state
- ❑ Stress management
- ❑ Important lifestyle factors
- ❑ Heal the gut
- ❑ Resolve nutrient deficiencies
- ❑ Support thymus
- ❑ Balance blood sugar

### Emotional State

There is a growing body of research showing that our mood and attitude has an enormous impact on our immune system. When we are happy and optimistic, the immune system works better. Conversely, depression depresses the immune system.

It was reported that the death of a spouse, an incredibly stressful event, causes a significant decrease in immune function, with significantly reduced natural killer cell. It is not limited to just the major stressors, many of the stresses of modern life work to depress immune function. Subsequent studies have demonstrated that depression and stress significantly diminish immune function.

## Stress

Stress increases the output of adrenaline and cortisol from the adrenal glands. These hormones inhibit white blood cell activity and cause the thymus to shrink. This causes a severe depression in immune function. The level of immune suppression is usually in proportion to the level of stress. Stress also stimulates the sympathetic nervous system and suppresses parasympathetic function. This prevents the release of potent immune-enhancing compounds that are released during parasympathetic dominant states.

## Lifestyle

A healthy lifestyle is essential for proper immune function. The following lifestyle practices improved the activity of natural killer cells:

- ❑ Not smoking
    - Cigarette smoke suppresses vital immune cells. Smokers are at a greater risk for infections and cancer because of the immunosuppressive nature of cigarette smoking. The immune activity of smokers that quit smoking begins to increase after 30 days of quitting.
- ❑ Increased intake of green vegetables, which are rich in vitamins and minerals essential for healthy immune function.
- ❑ Regular meals
- ❑ Proper body weight
- ❑ More than 7 hours of sleep
    - When we sleep the immune system is replenished. Sleep deprivation greatly weakens the immune system leaving the body more open to infections.
- ❑ Regular exercise
    - Regular exercise is essential to get the lymph to move. Lymph has been called our “immunity fluid”. One of its principle roles is to remove dead cells, bacteria, and metabolic waste from the body. Without lymph we would literally drown in toxicity. We aren’t talking about serious aerobic or anaerobic exercise here! Get your patients to walk. Moving the leg and arm muscles will get the lymph fluid moving.
- ❑ Proper nutritional support

## Healing the Gut

The importance of gastrointestinal health to the immune system cannot be over-emphasized. Methods of optimizing gut function may be just as important to the immune system as all of the above suggestions put together. Supplementation with HCL and digestive enzymes may be just as effective as supplementing with thymus extract or zinc in optimizing immunity.

This goes back to something we have been saying over and over again: Support the GI first!

## Resolving Nutrient Deficiencies and Providing Optimal Nutrient Support

One of the most frequent causes of immune depression is nutrient deficiencies. A deficiency in any single nutrient can affect immune function. Some of the following nutrients have an immune enhancing effect:

- Vitamin A- enhances WBC activity, increases antibody response, and antiviral activity.
- Vitamin C- antiviral, antibacterial, general immune function improvement, increases interferon, increases secretion of thymic hormones, and improves integrity of mucous membranes.
- Vitamin E- enhances antibody and cell-mediated immunity.
- Vitamin B6- B6 deficiency causes depressed antibody and cell-mediated immunity.

### Protein deficiency

Protein deficiency can severely affect cell-mediated immunity as well as all facets of the immune system. Protein deficiency is usually in association with other factors including nutrients and digestive dysfunction.

### Iron deficiency

Iron deficiency causes the following:

- thymus and lymph node atrophy
- Decreased WBC activity
- Decreased T and B cell ratio
- Iron is used by bacteria, therefore reducing iron during an infection is a good idea

### Zinc deficiency

Correcting zinc deficiency is essential because zinc has the following immune functions:

- Promotes destruction of antigenic matter
- Protects against free radical damage
- Acts synergistically with vitamin A
- Is required for proper WBC function
- Antiviral properties by inhibiting viruses
- A necessary cofactor for activating serum thymic factor

### Selenium

- Essential for function of antioxidant enzyme glutathione peroxidase
- Essential for development and activity of all WBCs

- ❑ Stimulates thymus function
- ❑ Enhances expression of immune-enhancing interleukin II
- ❑ Increases WBC proliferation and differentiation

## Thymus support

One of the most effective methods of re-establishing a healthy immune system is to support the thymus by:

- ❑ Preventing the thymus from shrinking by ensuring adequate intake of antioxidants
- ❑ Use nutrients that are required for the formation of thymic hormones
- ❑ Use glandular thymus extracts to enhance thymus activity

The thymus gland develops most in infancy and undergoes involution in adolescence. The thymus is incredible sensitive to free radical stress and oxidative damage. Low antioxidant levels can exacerbate thymus damage. Antioxidants are known for their immune supporting role. This may be due to their ability to protect the thymus from damage.

**Nutrients to enhance the thymus**

Deficiencies in any of the following nutrients may impact thymus activity:

- ❑ Zinc
- ❑ Vitamin B6
- ❑ Vitamin C

Of the above nutrients zinc is probably the most important deficiency to correct in terms of its thymus stimulating activity.

**Thymus glandulars**

A substantial amount of clinical data now supports the effectiveness of the supplemental use of thymus extract. It has a broad-spectrum immune supporting effect on the body. It increases the tone, function and/or activity of the thymus gland. Thymus glandulars have been shown to normalize the ratio of T helper cells to suppressor cells, whether the ratio is high (allergies or RA) or low (AIDS or cancer).

## Balance Blood Sugar Regulation

Another huge cause of immune suppression is the consumption of refined carbohydrates, especially refined sugar, and alcohol. Consuming 100 grams of carbohydrate in the form of glucose, fructose, sucrose, honey, or orange juice can significantly reduce WBC activity. The negative effects start within 30 minutes and lasts over 5 hours. The negative effect usually causes a 50% reduction in the ability of WBCs to destroy and engulf foreign particles. The maximum inhibition of WBC activity corresponds to the highest blood glucose levels. The inhibition is thought to occur because of the high insulin levels.

Given the huge amount of sugar consumed in the West it is not hard to make a conclusion that most people in the US and UK have chronically depressed immune systems. It is important to remember that it is not just refined sugar. Fruit juice impairs immune function, particularly during an infection. Maybe the old adage of orange juice for a cold is not really good medicine. Periods of detoxification and fasting will improve immune function, resulting in an increased ability of WBCs to destroy foreign substances.

# Immune Enhancement

This section will give you an idea of what therapeutic interventions you can use when you have a patient that needs immune enhancement.

## *When would you choose immune enhancement?*

1. Patients who have just had major surgery
    a. Major surgery is often followed by a period of immune suppression that increases the risk of both morbidity and mortality from infections.
2. Patients with low white blood cell counts demonstrating an immune deficiency
3. Patients suffering from infections: viral, bacterial, fungal etc.
4. Patients scoring high on the immune section of the NAQ
5. Patients with a history of or currently present with atopic (allergic) conditions: hayfever, asthma, and eczema
6. Adolescent obesity
7. Your elderly patients who have an increased risk of infections and allergic disorders such as eczema

## *Nutrition's Role in the Immune System*

Many of the following treatments will be treatments you would use to correct the causes of immune deficiency and suppression e.g. nutrient deficiencies are a major cause of immune deficiency so nutrient supplementation plays a large role in immune enhancement.

It has been clear for many, many years that specific vitamins, minerals, botanicals, amino acids, hormones and accessory nutrients show specific immune-enhancing effects. The following section discusses these nutrients and examines their role in enhancing the immune function. I will also recommend individual immune-enhancing formulas that have worked very well in our practices. We are not on the pay-roll of these companies and recommend them because of their demonstrated clinical efficacy.

## Vitamins and the Immune System

Vitamins play a role in immunity, resistance to infection and allergies. This section highlights some of the major vitamins and their connection to the immune system. None of these nutrients in isolation will enhance immunity. Let's take a look at the individual vitamins with this in mind, knowing that a number of supplement companies have immune enhancing formulas that contain all of these vitamins plus botanicals, amino acids, whey protein etc.

### Vitamin A

Vitamin A is known as a cell-signaling vitamin. It supports immunity by helping to maintain strong mucosal integrity and has been shown to protect cells against tumor activity.

Vitamin A in large doses can be toxic if used long term. I have had great results using liquid vitamin A in protocols for acute pneumonia and whooping cough. Pregnant women should not take vitamin A and please see the recommended doses below.

Early warning signs of vitamin A toxicity include fatigue, headache, joint pain, muscle aches, bone pain, and dry skin. These side effects are reversible upon discontinuation of the vitamin. Patients receiving high doses of vitamin A should have periodic measurement of serum calcium and aminotransferases (AST and ALT liver enzymes).

#### *Food sources*

- ❑ Fish liver oils
- ❑ Animal fats
- ❑ Liver
- ❑ Egg yolk

#### *Dosage*

**Maintenance:** 25,000 IU/d

**Therapeutic:** 100,000-300,000 iu/d short term

**Infections:**

At doses of 100,000-300,000 IU/day, may accelerate recovery from viral infections and other infections. This dosage should be discontinued after 3-5 days to avoid toxicity. Smaller doses, such as 10,000-25,000 IU/day may be used to prevent recurrent infection. Large doses of vitamin A markedly reduced mortality from acute measles infection. Vitamin A deficiency in children may increase the risk of acute respiratory-tract infections, diarrheal diseases, and mortality. (Source: Jonathan Wright, MD and Alan Gaby, MD)

### Beta carotene

Beta-carotene is the pre-vitamin A nutrient and is one fraction of a category of nutrients called carotenes. Carotenes in the body are converted into vitamin A as needed. Beta-carotene boosts the immune system by increasing vitamin A levels but it has immune

enhancing effects its own right. Beta carotene also increases the activity of the body's Natural Killer.

The good thing about beta-carotene supplementation is that it has no side-effects. The body has regulatory systems in place so that excess beta-carotene will not be converted into vitamin A. The only side effect is that your patients may experience a mild yellowing of the skin! This is harmless. Some doctors feel safer giving large doses of beta carotene instead of large doses of vitamin A.

We are not sure which of the carotenes provides the greatest immune benefits so supplementation with a mixed carotene supplement is advised.

### *Food Sources*

- ❑ Leafy green vegetables
- ❑ Yellow and orange fruits and vegetables

### *Dosage*

25,000 units (15 mg) per day. Daily doses as high as 180 mg (300,000 units) have been used. Beta-carotene cannot be used to obtain a therapeutic effect of vitamin A as described above. The conversion of beta-carotene to vitamin A is limited and regulated.

## Vitamin E

Vitamin E acts as an intercellular antioxidant and helps maintain cell membrane integrity in the body. In terms of immunity it has the greatest activity in supporting cell-mediated immunity i.e. T-cell mediated immunity. Like beta carotene, vitamin E increases natural killer cell activity in levels above the RDA.

### *Food Sources*

- ❑ Wheat germ oil
- ❑ Soy bean oil
- ❑ Seeds and nuts
- ❑ Grains
- ❑ Fresh wheat germ
- ❑ Green leafy vegetables
- ❑ Egg yolk
- ❑ Legumes

### *Dosage*

**Maintenance**: 100-400 IU/day

**Therapeutic**: Up to 3,000 IU

## Vitamin C

Vitamin C is a powerful antioxidant and as such helps to get rid of the free radicals that inevitably get produced after the immune system produces its oxidative attack on bacteria etc. Humans along with Guinea pigs and the Blue-Footed Booby Bird cannot synthesize vitamin C in the body and therefore a regular supply from the diet or supplementation is essential for good health.

### *Biochemical Effects of Vitamin C:*

- ❑ Promotes tissue healing and tissue integrity
- ❑ Enhances immune function
- ❑ Antihistamine
- ❑ Antiviral
- ❑ Antibacterial.
- ❑ Inhibits platelet aggregation
- ❑ ↓ serum uric acid
- ❑ Increases HDL
- ❑ ↓ the oxidation of LDL

Vitamin C has been shown to enhance the immune activity of vitamin E by protecting tissue levels of this vitamin. Vitamin C also has a strong antioxidant activity in the tissue of the respiratory system and therefore can protect the lungs from inhaled antigens and allergens.

Patients suffering from asthma, allergies and reactive lungs or have sensitive respiratory systems (each cold seems to go to the lungs) would do well to be on extra vitamin C supplementation.

### *Food Sources*

- ❑ Citrus fruits and juices, esp. orange, tomato
- ❑ In most fruits and vegetables

### *Dosage*

**Maintenance:** 1 – 3 grams/day

**Therapeutic**: Up to bowel tolerance i.e. increase the dosage until the patient gets loose stool. Patients will be able to tolerate larger doses of vitamin C when they are sick than they can when healthy. Bowel tolerance gives the optimal clinical effect; it will increase with the disease. Using the supplemental enzymes pancreatin and bromelain along with Vitamin C can increase by 2X the amount that can be taken without causing bowel intolerance. (Source: Jonathan Wright, MD and Alan Gaby, MD)

**Viral infections:**

500 mg, 3 times a day or more, up to bowel tolerance. Some individuals with mononucleosis have reportedly tolerated up to 200 g/day during the acute stages of the illness. As their condition improved, the amount of vitamin C tolerated decreased.

Intravenous administration in doses up to 75 g may be effective for acute viral infections: kills viruses, e-coli etc. (Source: Jonathan Wright, MD and Alan Gaby, MD)

**Bacterial infections:**

May be effective against urinary tract infections caused by **E. coli.** Effective dosage: 4-10 g/day in divided doses for several days. Large doses may be bacteriostatic or bactericidal against **Staphylococcus aureus** and may potentiate the effect of antibiotics against **Pseudomonas aeruginosa.** (Source: Jonathan Wright, MD and Alan Gaby, MD)

## Vitamin B6

Vitamin B6 deficiency is well known to be a cause immune suppression. Basically B6 acts as an activator for methyl transferase enzymes that help transfer methyl groups to molecules involved in immune function. Methyl transferase activity affects other systems beside the immune system so B6 plays a role in many body functions.

### *Food Sources*

- ❑ Bran
- ❑ Watermelon
- ❑ Banana
- ❑ Chicken
- ❑ Organ Meats
- ❑ Yeast
- ❑ Whole Grains
- ❑ Fish
- ❑ Legumes
- ❑ Blackstrap Molasses
- ❑ Leafy Green Vegetables. B6 is destroyed by cooking and food processing

### *Dosage*

Maintenance: 5 mg/day

Therapeutic: 50 mg – 3 g/day

**Asthma**

Prevention of asthma attacks (50-200 mg/day in adults, smaller doses in children). B6 is a phosphodiesterase inhibitor same as the steroid inhalers. (Source: Jonathan Wright, MD and Alan Gaby, MD)

### *Recommended Supplements*

We recommend that you look for vitamin B6 supplements in the form of Pyridoxal-5 phosphate, the most biologically active form of the nutrient.

## Minerals and Trace Elements and Immune Function

### Zinc

As we have already discussed above zinc plays a large role in maintaining immunity in our bodies and zinc deficiency is very strongly associated with immune dysfunction and susceptibility to infections. Zinc status affects cytokine levels, natural killer cell function, and decreases T-cell formation. It is perhaps **the** most important nutrient when it comes to the immune system.

We suggest checking zinc status in all patients that you suspect are suffering from immune dysfunction using the Zinc Taste Test or Intracellular Zinc studies.

#### *Food Sources*

- ❑ Pumpkin seeds
- ❑ Sunflower seeds
- ❑ Squash seeds
- ❑ Organ meats
- ❑ Shrimp
- ❑ Oysters
- ❑ Herring
- ❑ Hard cheese
- ❑ Yeast
- ❑ Wheat germ
- ❑ Brown rice
- ❑ Whole grains and sprouted grains
- ❑ Green beans
- ❑ Eggs
- ❑ Onion
- ❑ Spinach
- ❑ Chickpeas

#### *Dosage*

**Maintenance**: 15 mg/day

**Therapeutic**: 30 – 100 mg

### Copper

Copper acts as a co-factor in multiple antioxidant enzymes including superoxide dismutase and thus protects against the free radical activity that occurs when the immune system is activated. A copper deficiency will decrease lymphocyte response to antigen stimulation and impair cell-mediated immunity. Do not supplement copper by

itself because copper can become toxic. Supplement as part of an immune enhancing formula.

### *Food Sources*

- ❑ Beans
- ❑ Peas
- ❑ Leafy green vegetables
- ❑ Whole grains
- ❑ Prunes and raisins
- ❑ Liver
- ❑ Seafoods
- ❑ Meat
- ❑ Almonds
- ❑ Pecans
- ❑ Walnuts
- ❑ Wheat germ
- ❑ Soybeans
- ❑ Pomegranates

### *Dosage*

Maintenance: 2 mg

Therapeutic: 6-8 mg

## Selenium

Selenium has been recognized as a useful nutrient to protect the body and cells in particular from certain cancers (breast, lung, liver, urogenital, colorectal, prostate and ovarian). It helps remove harmful lipid and hydroperoxides form the body. It acts with vitamin E and manganese as an antioxidant in the glutathione regeneration cycle (we'll talk more about this in Module #4) and impaired cell-mediated immunity has been noticed in selenium deficient patients. Selenium may have a synergistic relationship with zinc. In combination these 2 nutrients significantly reduce infection rates.

### *Food Sources*

- ❑ Apples
- ❑ Brewers yeast
- ❑ Organ and muscle meats
- ❑ Fish,
- ❑ Shellfish
- ❑ Whole grains

- ❑ Dairy
- ❑ Kelp
- ❑ Garlic
- ❑ Mushrooms

Selenium content in plant sources depends on soil selenium concentrations, which are typically low.

### *Dosage*

100 – 250 mcg/day. You can use more short term.

## The Role of Probiotics and Immune Enhancement

We know from our study of the GI that an imbalance of the normal bacterial flora in the gut has profound effects on the mucosal lining and the Gut Associated Lymphoid Tissue i.e. dysbiosis is a major cause of immune dysfunction!

Bringing the normal bacteria or flora back into balance will help boost and enhance immunity. One of the ways to do this is to supplement with probiotics.

### *Recommended Supplements*

For a probiotic to be effective, there are four criteria of primary importance that must be delivered:

1. Proven product shelf stability, ensuring that the probiotic organisms reach you in the "correct" potency
2. Ability of the selected cultures to survive gastric juices/acidity
3. Ability of the cultures to attach to human epithelial tissue
4. Proven in clinical trials

**Look for probiotic supplements that fit these 4 criteria.**

### Lactoferrin

Lactoferrinn is thought to act in the body as a pre-biotic. A pre-biotic is a substance that actually supports the growth of beneficial bacteria and is different than pro-biotics, which are the actual bacterial flora themselves. By supporting the growth of beneficial flora pre-biotics contribute to the eradication of pathogenic dysbiotic bacteria thus enabling a good healthy immune system. Lactoferrinn is a natural part of biologically active whey powder and is naturally occurring in the human body as a part of the mucous membrane secretions.

Its actions include increasing the production of natural probiotics in the body and inhibiting pathogenic bacteria growth in the gut, such as E. coli, Staph. and H. pylori.

## The Role of Botanicals

It is clear from the amount of available literature that the plant kingdom has a major impact on the human immune system. Botanicals act in a number of ways to help support the immune system:

### As deep immune activators.

Important immune activating botanicals would include the following herbs and medicinal mushrooms:

- ❑ Astragalus membranaceous - Astragalus
- ❑ Ligustrum lucidum - Ligustrum
- ❑ Lentinus edodes - Shitake mushroom
- ❑ Schizandra chinensis - Schizandra
- ❑ Ganoderma lucidum – Reishi mushroom
- ❑ Codonopsis tangshen

### As anti-microbials

These are some of many plants that act as anti-microbials:

- ❑ Echinacea spp.- Echinacea or Cone Flower
- ❑ Hydrastis candensis - Goldenseal
- ❑ Mahonia aquifolium – Oregon grape
- ❑ Baptisia tinctoria - Wild Indigo
- ❑ Commiphora mol-mol - Myrrh
- ❑ Usnea spp.- Old Mans Beard
- ❑ Thuja occidentalis - Western Hemlock
- ❑ Calendula officinalis - Calendula
- ❑ Allium spp. - Garlic & Onion

### As adaptogens or hormonal modulators

Botanicals in this category work via the hormonal modulation of the immune response. Adaptogens also work via the adrenal system. These are some well known adaptogens:

- ❑ Eleutherococcus senticosus - Siberian Ginseng
- ❑ Panax spp. - Korean & American Ginseng

### Herbal Formulas to enhance immune function

Many of the supplement companies that provide supplements to the practitioner market provide herbal formulas that will help with immune enhancement. Look for products that provide a broad-spectrum botanical approach and include the types of immune activators and anti-microbials I list above

## The Role of Accessory Nutrients

### Thymic Polypeptide Immune Factors

These are glandular compounds extracted from fresh, healthy bovine thymus glands. The theory is that these glands contain immune cells and tissue factors that help support healthy immune function and impart this effect when ingested.

Physicians have been using glandular therapy with great success for many years. Thymic polypeptide immune factors replace the factors lost as we age and the thymus starts to shrink.

### Muramyl Peptides

Muramyl peptides are nontoxic cell wall extracts from lactobacillus fermentum, a bacterium that is part of our normal bowel flora. They stimulate the immune system, raise the alert to potential invading pathogens, and increase the secretion cytokines and interleukins, which send messages to the white blood cells and the immune system to become more active. Muramyl peptides increase the ability of macrophages to seek out and destroy cells that have been infected by viruses, which is very important for those who have been exposed to the flu virus, or other viruses such as herpes, HIV, etc.

### Beta 1,3 d-glucan

Beta 1,3 d-glucan acts very much like muramyl peptides in that it is a potent signaling molecule for macrophage activation. It is also a potent free radical scavenger. It is able to protect blood macrophages from free radical attack allowing these cells to continue their important functions in the body. In light of what is known about the potential of free radicals to accelerate aging, cause cancer and other diseases, this particular effect of Beta-1,3-Glucan is especially important.

### Mushroom extracts

There has been much research in the last few years on the immune boosting effects of specific mushrooms. Reishi, Maitake, Shitake and Cordyceps mushrooms have been used for thousands of years in China and India for their ability to promote good health. It is clear from the research that certain components of these mushrooms called polysaccharides have the ability to increase and stimulate our body's immune response to viruses, bacteria and funguses.

Medicinal mushrooms are rich in beta-glucans and stimulate natural defense mechanisms of the immune system: macrophages, natural killer cells and T cells enhancing the production of interleukins 1 and 2 and specific lymphokines that are effective at fighting cancer.

### Whey Protein

Whey protein has demonstrated to increase the levels of glutathione in the body. Glutathione is a potent molecule produced naturally in the body and has a strong role to play in detoxification by removing toxic compounds from the body that would adversely

affect the immune system.  Whey protein improves immune function and helps the body fight infections.

Not all whey proteins are equal. You must make sure that you use a whey protein that is processed to remove the lactose and fats without eliminating its biologically active ingredients. The process must use low temperature and say that it is a “non-denatured, low temperature” whey product.

### *Dosage*

10-30 grams per day (1-3 scoops). Mix in water, juice or use in a smoothie. It is best taken on an empty stomach and 20 minutes before eating other food.

## The Role of Hormones

### DHEA

DHEA supplementation in patients with demonstrated deficiency has been shown to have quite a dramatic immune boosting effect. It does this through a number of different mechanisms of action:

1. Increases the number of monocyte immune cells
2. Increases the number and activity of B-lymphocytes
3. Increases T-lymphocyte activity
4. Increases interleukin-2 levels and suppresses effects of interleukin-6
5. Increases number and activity of natural killer cells
6. Suppresses cortisol levels, which have been associated with immune suppression

We recommend that you run an Adrenal Stress Index on all patients that you suspect of immune deficiency.

### *Dosage*

Typical dosage for someone over the age of 35 is 15 – 75 mg/day. Please test before prescribing.

### Melatonin

Melatonin has a strong role to play in enhancing immune function. It does this by increasing T-helper production and as such has a role to play in the treatment of cancer. Melatonin enhances the production of specific immune compounds such as interleukin 2, 4 and 10, gamma-interferon and eosinophils. It is also very effective at suppressing immune-cell destroying free radicals.

### *Dosage*

Recommended dose for healthy people is 500 mcg/day. You may go up as high as 10 mg/day with immune compromised or suppressed patients.

# *Immune System Protocols*

The following protocols are designed to give you an idea of what nutrients can be used for specific conditions. Using these protocols without first finding out the cause of the condition is cookbook green-allopathic medicine. Please do yourself and your patients a favor and do the primary and specialized testing to identify where the physiological blocks are before using these protocols.

A number of these protocols call for intravenous administration of nutrients. We realize you may be unable to do this form of treatment. We mention the protocols so you can refer patients to physicians who do use IV therapy. Names of specific IV protocols, for instance the Myer's Cocktail, are well known in the community of physicians who use IV therapy.

## Infection, Acute (Short-term Treatment: 3-7 days)

(Source: Jonathan Wright, MD and Alan Gaby, MD)

- ❑ **Diet:** Eliminate all simple sugars (simple sugars inhibit neutrophil phagocytosis and other components of immune function).
- ❑ **Vitamin C** to tolerance, taken every 1-2 hours as needed.
- ❑ **Vitamin A**, 100,000-150,000 IU, 2 times a day (3-5 days only); proportionately lower doses for children. Do not use vitamin A during pregnancy.
- ❑ **Zinc (gluconate) lozenges for colds:** 13-23 mg, 4-6 times a day, short-term only.
- ❑ **Echinacea and goldenseal (Hydrastis).**
- ❑ **Colloidal silver**, 1 teaspoon initially, then 1 teaspoon, 4 times a day (adults), proportionately less for children.
- ❑ **Olive leaf extract**, 500 mg, 3-4 times a day (for viral infections).
- ❑ **Bladder infection:**
    - **Vitamin C** to bowel tolerance, 4-6 times a day.
    - **Cranberry juice**, 4 ounces, 3 times a day.
    - **D-mannose powder**, 1/4 teaspoon, 3-6 times a day, depending on severity. Effective only against E. coli.

## Infection, Chronic, Recurrent

(Source: Jonathan Wright, MD and Alan Gaby, MD)

- ❑ **Diet**: Avoid sugar, refined carbohydrates, alcohol. Identify and eliminate/desensitize food and inhalant allergies.
- ❑ **Vitamin C**, 1 g, 3 times a day or more (up to bowel tolerance, 3-4 times a day).
- ❑ **Zinc (picolinate, citrate),** 30-60 mg/day. Balance with 2-3 mg/day of copper.
- ❑ **High-potency multiple vitamin/mineral.**

- **Vitamin A**, 25,000 IU, 1-2 times a day for several months, then reduce dose to 25,000 IU/day.
- **Thymus Polypeptide**, 500-1,000 mg, 1-2 times a day.

## Asthma

(Source: Jonathan Wright, MD and Alan Gaby, MD)

- **Primary and Advanced FDM testing:**
    - Test for hypochlorhydria (chem. screen, gastric string test)
    - Test for pancreatic insufficiency (Digestive stool analysis)
    - Test Candidiasis (stool analysis)
    - Allergy testing or Coca pulse testing for foods
    - Test for B12 deficiency
    - 24-hour urine for sulfite and inorganic/organic sulfate.
    - Adrenal stress test for low DHEA levels
- **Diet:** Eliminate, rotate, desensitize food allergies (especially important in children). Identify, eliminate/desensitize inhalant allergies. Eliminate sugar, refined carbohydrates, sulfite preservatives.
- **Vitamin B 12** (1,000-3,000 mcg/day) intramuscularly for up to 30 days, taper according to response. Works best for children. (Very helpful in most children and teens, less effective with advancing age). Helps decrease sulfite sensitivity.
- **Hydrochloric acid with pepsin** (5-70 grains per meal) if hypochlorhydric (childhood incidence of hypochlorhydria is 80%). Dosage based on age and severity of hypochlorhydria.
- **Magnesium** (citrate, aspartate), 125-500 mg/day. Magnesium chloride (18% aerosol): 2 puffs, 3-6 times daily, inhaled.
- **Vitamin B6**, 25-50 mg, 2-4 times a day.
- **Vitamin C** to bowel tolerance, 3-4 times a day. Calcium ascorbate or sodium ascorbate are preferable to ascorbic acid.
- **Cod liver oil**, 5-15 ml/day.
- **Super Saturated Potassium Iodide** (SSKI), 1-5 drops daily.
- If sulfites are present in the urine or if the ratio of inorganic/organic sulfate is abnormal, give the following intravenous therapy: molybdenum (250-500 mcg), vitamin B6 (200 mg), vitamin B 12 (1,000 mcg), magnesium chloride (500 mg), administered 2-3 times weekly for 6-8 weeks, followed by oral molybdenum, 1-3 mg/day by mouth. Monitor urinary sulfite and/or inorganic/organic sulfate. Monitor RBC copper levels with long-term molybdenum treatment.
- **Intravenous therapy**: "Myers' cocktail," for acute exacerbation or persistent chronic asthma. Use injectible nutrients without preservatives when possible. "Myers' cocktail" will often resolve acute asthma attacks in 1-2 minutes.

- ❑ **DHEA** if level is low (especially in patients receiving oral or inhaled corticosteroids).

### Eczema

(Source: Jonathan Wright, MD and Alan Gaby, MD)

- ❑ **Primary and Advanced FDM testing:**
    - Test for hypochlorhydria (chem. screen, gastric string test)
    - Test for pancreatic insufficiency (Digestive stool analysis)
    - Comprehensive Digestive Stool Analysis
    - Fasting red blood cell essential fatty acids.
    - Allergy testing or Coca pulse testing for foods
- ❑ **Identify and eliminate/desensitize food allergies.**
- ❑ **Zinc** (picolinate), 30 mg, 1-3 times a day.
- ❑ **Copper**, 2-4 mg/day (with long-term zinc therapy).
- ❑ **Essential fatty acids:** Flaxseed, sunflower, or safflower oil (& 10 g/day for adults, *2-5* g/day for children). Evening primrose oil (3-6 g/day for adults, 1.5-3.0 g/day for children) may be effective in cases in which other sources of essential fatty acids are ineffective.
- ❑ **Vitamin E** (400-800 IU/day), if using essential fatty acids.
- ❑ **Vitamin A** (25,000-50,000 IU/day), taper as improvement occurs.
- ❑ **Hydrochloric acid** in many cases. If patient is hypochlorhydric, administer vitamin B12 (1000 mcg) intramuscularly, once a week.
- ❑ **Pancreatin** helpful in some cases.

# Allergy and Sensitivities

## *Treatment Options for Allergies*

The following recommendations are for patients that are suffering from allergies. These may be seasonal allergies or food allergies.

### Diet

The best diet for your patient is the hypoallergenic diet that is part of the Food Elimination and Challenge Program. Follow that program to clear all allergens from the diet and then challenge suspected allergenic foods.

### Optimal Bowel Transit

Adequate elimination is essential to reduce the allergenic load on the body. Use the Bowel Transit Time Test from Dr. Weatherby's Take Home Testing Book to see whether

they have an optimal bowel transit. Consider bentonite clay, psyllium powder, magnesium or herbal bitters to correct an abnormal bowel transit

## Improve digestion

Assess your patients' digestive function and supplement with HCL and pancreatic enzymes if needed. Encourage them to eat slowly and chew food well.

## Improve bowel flora.

Supplement with probiotics if needed.

## Remove allergens from their environment

Improve resistance to environmental allergens and foods by encouraging the use of a HEPA filtration system or air purifier to reduce body burden of allergens.

## Assess need for antioxidants.

Use BVlood chemistry testing and/or Organic Acid testing to assess for oxidative activity in the body. Antioxidants will strengthen cell walls and help stabilize mast cells from releasing their cytotoxic content.

## Individual Nutrients

### Vitamin E

Strengthens cells membranes, has cell membrane tightening properties and stimulates anti-inflammatory activity.

### Selenium

Involved in the synthesis of glutathione in the liver

### Vitamin C

Acts as a natural antihistamine with doses greater than 6-8gms.

### Bioflavanoids

Bioflavanoids such as quercetin, hesperidin, and catechin have the following anti-allergy functions in the body:

- ❑ Decrease the degranulation of mast cells
- ❑ Inhibit lipoxygenase, phospholipase, and phosphodiesterase
- ❑ Catechin inhibits histamine decarboxylase which is the enzyme responsible for the conversion of histadine to histamine.

## Assess and Support Adrenal Function

Consider running an Adrenal Stress Index to assess for cortisol/DHEA ratios and to check for total secretory IgA levels.

Stress management, vitamin C, pantothenic acid and adrenal glandulars all have therapeutic effects on the adrenals. Recommend some form of physical activity, which will decrease stress.

# *Treatment Options for Sensitivities*

This is a brief overview of some treatment options for patients with known sensitivities to dust, mold, and foods.

1. Avoid your known allergens - food and environmental
    a. Recommend a HEPA air filter, especially in the bedroom
    b. Molds – have patient use a bleach 1:5 dilution and clean bathroom windows, tiles etc. monthly. Recommend they keep house temperature at 70 degrees for 8 hours a day and they should keep no books in the bedroom because they are a source of mold.
    c. Dust - recommend the use of a hypoallergenic mattress cover and have no throw rugs in the house. They should vacuum or damp mop the floors at a minimum 3 times/week. No stuffed animals in the bedroom.
    d. Food – recommend the Food Elimination and Challenge Program
    e. Regularly change filters on your forced air heating system.
2. Improve immune balance and adrenal function.
    a. Lower physical and emotional stressors
    b. Establish a regular sleep and eating pattern
    c. Use nutritional supplements as needed based on testing
3. Improve digestion and pancreatic function.
    a. Assess GI and supplement as appropriate to correct hypochlorhydria and pancreatic insufficiency
4. Improve bowel function so patient has proper elimination daily
    a. Recommend high fiber foods
    b. Recommend they drink sufficient quantities of clean, pure water

# PLEASE NOTE

One of the best ways of treating allergies and sensitivities is to treat the underlying gastrointestinal dysfunction. There are so many contributory factors at play between GI dysfunctions such as intestinal hyperpermeability and mucosal barrier dysfunction and allergies that to not assess and treat the gut in all patients with allergies would be madness.

# Summary

I hope you have found this information helpful and useful. As I mentioned at the beginning of this guide, in order to improve immune function, you must first identify and remove any stressors that impact the immune system and then strengthen/support the weaknesses. In order to have optimal immune function, avoid things that suppress the immune system and choose things that enhance immune function!

Our goal at Optimal DX (ODX) is to help people move towards optimal health and expand their awareness of what's possible. We create cutting-edge tools to offer a clear view of each person's health and better define how their health can be improved.

ODX's flagship product is the Functional Health Report, which offers a window into the body's functions and a comprehensive view of your patient's health. We also offer a Treatment Plan Builder, which takes the health concerns from the Functional Health Report and allows you to build a unique treatment plan using supplements from some of the very best nutraceutical companies in the world, including access to Fullscript's entire catalog. Come and check us out!

Wishing you all the very best,

Dr. Dicken Weatherby

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