Nutritious & Delicious

HEALTH MATTERS!

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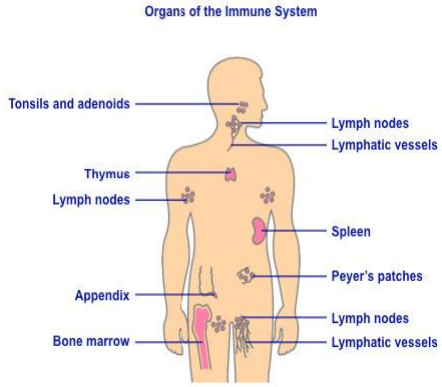
Immune System Support

The immune system: Is the body's defence against infectious organisms and other invaders – our shield against disease. Through a series of steps called the immune response, the immune system detects, and then attacks organisms and substances that invade our systems to cause disease. **It keeps us healthy and free from illness.**

The immune system starts with the protective barrier of the skin. Inside the body it is made up of a network of cells - such as white blood cells (lymphocytes, monocytes, neutrophils & macrophages etc), T & B Cells, Tumour Necrosis Factor [TNF], Natural Killer [NK] Cells), antibodies (Immunoglobulin A (IgA) IgE , IgG & IgM), tissues and organs (such as the thymus gland, lymph glands and the spleen) that work together to protect the body.



In most cases, the immune system does keep people healthy and prevent infections. Sometimes, however, whether through nutrient deficiencies or chronic stress, the immune system can be impaired leading to illness and infection.

One protective action of the immune system is inflammation, a response that fights bacteria and other infectious agents. But when inflammatory responses are excessive, as they are in asthma and rheumatoid arthritis, etc., they result in redness, swelling, pain, stiffness and other symptoms.

Gut function – the barrier from the outside: Although composed of only a single cell layer, the intestinal epithelium (thin tissue layer) forms a barrier against penetration of microbes. Defects in this barrier function contribute to the development and perpetuation of inflammation in IBD, as well as allowing pathogens to enter the blood stream. Epithelial cells of the small intestine have a mucus coating that interact with and trap bacteria. Epithelial cells also act as microbial sensors by secreting certain of the abovementioned cells in response to bacterial entry. This results in the recruitment of white blood and T cells, and so enhances the induction of protective immunity. Indeed, gut-associated lymphoid tissue (GALT) is the prominent part of mucosal-associated lymphoid tissue (MALT) and represents almost 70% of the entire immune system.

Allergies and the immune system: Most allergic reactions are a result of an immune system that responds to a "false alarm." Allergens can be inhaled or ingested, or they can enter through the skin. Common allergic reactions, (hay fever, certain types of asthma and hives) are linked to an antibody called IgE. Each IgE antibody can be very specific, reacting against certain pollens and other allergens. When a susceptible person is exposed to an allergen, the body starts producing a large quantity of similar IgE antibodies. The next exposure to the same allergen may result in an allergic reaction. Symptoms of an allergic reaction will vary depending on the type and amount of allergen encountered and how the body's immune system reacts to that allergen. The integrity of the gut can play a role – in certain situations the gut barrier can become more porous than it should be (intestinal permeability) resulting in undigested foods entering the blood stream setting off an immune response.

Support - adopt healthy living strategies: Your first line of defense is to choose a healthy lifestyle. Following general good-health guidelines is the single best step you can take toward keeping your immune system strong and healthy. Every part of your body functions better when protected from environmental assaults.

- Do not smoke.
- Eat a diet high in low GI fruits, vegetables, whole grains, and low in saturated fat.
- Exercise regularly – 3 x 30 minutes a week at least.
- Maintain a healthy weight.
- Control your blood pressure – eat less salt/sodium.
- If you drink alcohol, drink in moderation <14 units/week.
- Get adequate sleep – 8hrs/night.
- Take steps to avoid infection, such as washing your hands frequently and cooking meats thoroughly.
- Get regular medical screening tests for people in your age group and risk category.

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Nutritional Support: Food provides you with the nutrients you need to maintain a healthy body and immune system. Energy intake (calories) seems to have an important influence on immune activity. Undernourished people are at greater risk from infections, whilst excessive energy intake (calories) may also compromise the immune system's ability to fight infection - obesity is an extremely complex disease and many processes and pathways are altered, any of which could affect the immune system.

Carbohydrates: supply the immune system with energy so that it can work better and fight disease.

- **Choose whole grain complex carbohydrates (help to clean the gut and keep the integrity)**: wholewheat bread, brown rice, quinoa, amaranth, freekeh, barley, cereals like oatmeal and shredded wheat.
- **Limit simple sugars and processed carbohydrates**: all sugar, honey, candy, molasses, white bread / pasta products, cakes, pastries, cookies, pies etc.

Proteins: make enzymes, which help the immune cells kill germs, viruses, bacteria etc. They also help keep the GI tract and immune system healthy. Proteins comprise of amino acids – the precursors to neurotransmitters – that help to modulate immune functions.

- **Choose Lean Meats:** white poultry, lean pork, lean red meats and most fish.
- **Choose Plant Proteins:** nuts and beans, Quorn, tofu and other soy products.

Fats: are necessary for the immune system to work properly as they serve as fuel for the immune cells, and healthy fats (Omega 3 fats) will help to reduce inflammation. Unhealthy fats affect the body's immunity by causing both inflammation and obesity, which triggers an overactive, and therefore compromised, immune system. Diets high in saturated fat can depress immune responses and increase the risk of infections, whereas diets lower in saturated fats can also increase immune activity and could also strengthen the type of immune cells.

- **Omega-3 fats** such as: salmon, mackerel, herring, halibut, tuna (fresh), anchovies, trout and sardines.
- **Vegetable sources are:** flaxseeds & hemp seeds (& oils-cold pressed), walnuts, pumpkin & chia seeds, seaweeds and GLV.
- **Limit Saturated & unhealthy fats:** Trim the fat/skin off all meats, limit bacon, sausage, salami and other high fat meats. Avoid heavily processed coconut oil, palm oil and hydrogenated vegetable oils.
- **Healthy saturated fats (coconut oil):** is sent straight to the liver and used for energy and in health and has antiviral and antibacterial activities that support the immune system.

Fermented Foods: research suggests that regular consumption of fermented and pickled foods may enhance our immune defences in the gut, by acting as prebiotics and helping the beneficial bacteria to flourish.

Nutrients that support immune function

- **Zinc: supports the thymus gland (which trains T-cells in the immune system)**: oysters, red meat, eggs, herrings, sunflower, pumpkin seeds, peanuts and leafy greens.
- **Iodine: supports activity of NK cells**: seawater, seafoods, kelp, iodised salt and dairy products.
- **Vitamin C: increases antibody production**: citrus fruits like oranges and lime etc, green peppers, broccoli, leafy greens, tomatoes, berries and peas.
- **Vitamin E: with Vitamin C increases T-cells, interleukin 2, and TNF**: nuts, fish liver oils, seeds, wholegrains, GLV and root veg.
- **Vitamin A: can help normalise cell division and supports the thymus gland and antibody production**: carrots, squashes, broccoli, sweet potatoes, tomatoes, leafy greens and brightly coloured fruits.
- **Vitamin D: helps to modulate the immune system**: oily fish, sunlight, dairy and egg yolks.
- **Selenium: supports T cell activity, NK cells and antibody production**: fish, shellfish, Brazil nuts, wholegrains, pulses, leafy greens, chicken, tuna and garlic.
- **Vitamin B6: supports T cells and B cells, plus 50 other enzyme reactions**: milk, eggs, wholegrains, vegetables, nuts, meat & liver, yeast, oatmeal, soybeans, avocados and walnuts.
- **CoQ10: supports IgG antibody production.** This needs to be supplemented if needed.
- **Glutathione: supports T cell activity**: asparagus, avocado, spinach, broccoli, tomato, carrot, etc.
- **Probiotics: modulate immune and anti-inflammatory responses.** This needs to be properly supplemented if not obtained by the diet from pro-and-prebiotic foods – not with sweet probiotic yoghurt drinks.

Please Note: This handout should only be used as a guide to help inform you as to the diet and lifestyle modifications that **may** help to support your immune system. It **should not** be used as a definitive guide to the immune system and immunity. If you think you may have immune system issues then please contact your medical doctor, or a qualified nutritionist.