

Immunity

Your First Line of Defence

Probably the single most important thing that keeps us all alive and healthy in the face of myriad challenges we are confronted with each and every minute of every day throughout our lives is our immune system. It is literally our first line of defence against all that would harm us.

In the traditional medical sense our immune system was seen primarily as a defence against biological attacks from bacteria, viruses and other potentially harmful (pathogenic) microorganisms. Though that definition is completely true and very important, it is more limited than many modern researchers believe. A modern perspective of the immune system calls for the inclusion of chemical and biochemical challenges as well. The ability for the body to neutralise a potentially toxic chemical or quench a potentially harmful biochemical reaction is also an important protective function that contributes to our “immunity.”

A healthy, well-functioning immune system provides three distinct health benefits: prevention, recovery, and healing. The immune system prevents and protects you from harm. But should you contract a disease or

experience a physical trauma from an accident or from other means, recovery and healing then come into play. We are most prepared for challenges when these three “Pillars of Immunity” are functioning at their best. **And the most**

powerful tool we have to strengthen immune defence is diet and nutrition.

The following pages present current scientific discoveries regarding our immune system and how to keep it as strong as possible. This more





Feed Your Defences

Healthy bodies keep the immune system strong! Strong immune systems keep the body healthy! That's a pretty clear and obvious relationship. What's maybe not so obvious is that both of these are completely and entirely dependent upon diet. Poor diet equals poor immune function and poor health. That is perhaps most strongly supported by the understanding that **every dietary deficiency results in some form of immune compromise.**

Every deficiency, all the time! In fact, malnutrition is the most common cause of immune deficiency in the world.¹ Even in the "industrial world" where food is widely available to nearly everyone, undernutrition, defined as a lack of key nutrients with or without a lack of calories, also results in immune compromise; especially for the elderly or hospitalised.^{2,3}



Un·der·nu·tri·tion

noun: lack of key nutrients with or without a lack of calories

Not surprisingly, **the over-ingestion of calories that leads to overweight and obesity can also lead to immune system compromise.**⁴ Thus, maintaining a healthy body weight also promotes attaining and maintaining optimal immune potential.

Powerful Protein

A lack of adequate protein in the diet, known as protein-energy malnutrition or PEM, is a common cause of immune dysfunction. This is true for all of us, but especially in the young and elderly.^{5,6} It is well known that protein deficiencies can stunt physical growth and mental

NeoLifeShake

A delicious protein shake with 27g of high quality protein per serving*. With 25 essential vitamins & minerals and biologically complete with all 22 amino acids.

- #690 – Creamy Vanilla
- #691 – Berries n' Cream
- #692 – Rich Chocolate

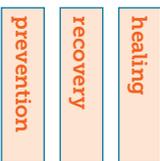
**when mixed with skim milk*

development, and that these results are perpetuated into adulthood.⁷ Whatever the cause of insufficient dietary protein, the result is an increased risk of infection from adverse effects on both our innate (immediate, non-specific response to a challenge) and adaptive (learned, specific response from past exposures) immune capabilities.⁸

Though protein is widely available within the western industrial food supply, **poor protein quality or the conscious decision to avoid protein, especially animal protein, can result in protein deficiency.** It is not manifested as a black or white situation, but rather one of degrees, causing the immune system to be generally weaker than it would be with a diet rich in high quality protein.

It should also be noted that protein deficiencies usually occur along with deficiencies of essential micronutrients, including: vitamins A, B₆, D, E, folic acid, zinc, iron, copper and selenium. Thus assuring micronutrient abundance is a critical, immune-building factor as well.⁹

Pillars of Immunity



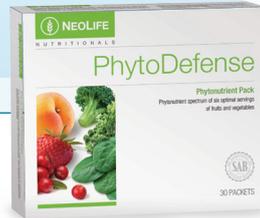
We are most prepared for challenges when these three "Pillars of Immunity" are functioning at their best.

comprehensive perspective includes a wide range of evidence that is intended to provide you with *News You Can Use* about this critically important aspect of health; for you, your family and to share with others.

Defend with Vitamins

Poor Nutrition = Poor Immunity, Great Nutrition = Great Immunity

Carotenoids: Anyone who has been around NeoLife for any length of time has probably heard the company or its Scientific Advisory Board members speak about how the quality of your diet can modulate your immune potential. It has been well established that the levels of certain nutrients relate directly to immune capacity. In fact, in 1997, researchers from the United States Department of Agriculture (USDA) published evidence, in the *American Journal of Clinical Nutrition*, on research they conducted with NeoLife Carotenoid Complex. In that data, they showed that **Carotenoid Complex is capable of boosting specific markers of immune competence in an otherwise carotenoid deficient diet.**¹⁰ That effect has been shown several times since then, making dietary carotenoids an important immune competence indicator.¹¹ It is, at least in part, because of this relationship between carotenoids and immune function **that abundant and diverse dietary carotenoid intake is also associated with cancer prevention;** including prostate cancer,^{12,13} breast cancer¹⁴, and several more including mouth, pharynx, larynx and lung.¹⁵



PhytoDefense

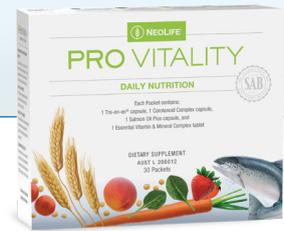
Daily phytonutrient protection with the power of six optimal servings of fruits & vegetables to support your body's natural defences.

#661 – 30 packets

Omega-3 fatty acids: Several studies have shown that some specific dietary fatty acids can also modulate immunity.¹⁶ Again this means that their presence or absence, and in this case balance, can affect immune capability. This is particularly true of the polyunsaturated fatty acids of the classes known as omega-3 and omega-6; both are considered essential. Within the immune system they are incorporated into the membranes of immune cells. There they modulate cell signalling of immune and inflammatory responses, as well as the production of other immune molecules called eicosanoids.

Generally the “western diet” contains far too much omega-6 (inflammatory) and

far too little omega-3 (anti-inflammatory) content. The result creates an immune response imbalance that generates too much of the inflammatory components and too little of the anti-inflammatory components. **Research has shown that healing is not fully reached as long as inflammation persists.** One of the best examples of this was shown in a study done using NeoLife Salmon Oil Plus where **it was shown that supplementation with this product resulted in more complete quenching of inflammation**



Pro Vitality

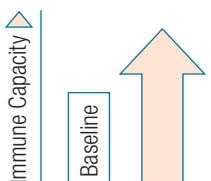
Provides daily whole food nutrition for lifelong health and vitality from whole grains, fruits & vegetables, fish and vitamins & minerals.

#665 – 30 packets

associated with healthy immune function, thus promoting more complete healing.¹⁷ This data was later cited in the *New England Journal of Medicine*.¹⁸

There are many means by which omega-3 fatty acids have been connected to healthy, active immune function.

Boosts overall immune function by 37% in just 20 days!



113kgs. of raw fruits and vegetables in every bottle!
#660
90 capsules



Omega-3 Salmon Oil Plus

Promotes healthy balance of pro- and anti-inflammatory factors.

#641 – Salmon Oil Plus, 90 capsules

Leading edge research has recently put the spotlight on three specific ways in which they promote optimal immune function. One is that the increased presence of omega-3 fatty acids in specific immune cells (T-cells) affects its cell membrane structure (fluidity), responsiveness and function known as phagocytosis, the process by which immune cells engulf and remove pathogenic organisms or cellular debris.

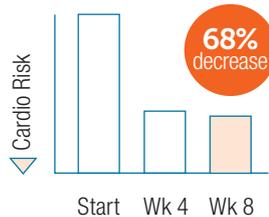
Phag·o·cy·to·sis

noun: the process by which immune cells engulf and remove pathogenic organisms or cellular debris

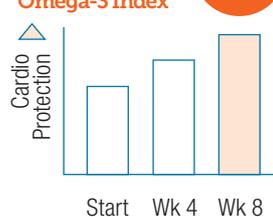
A second mechanism is promoting the functional activity of leucocytes (white blood cells) in immune defences against infectious and foreign “invaders.” Third is the mediation of inflammatory response between pro-inflammatory and anti-inflammatory forces, including the production of “resolvins,” specific omega-3 generated components that resolve inflammation and promote healing. **This also lowers the potential for autoimmune inflammatory disorders such as rheumatoid arthritis, inflammatory bowel disease and asthma.**¹⁹

Clinically Proven Benefits of Salmon Oil Plus

Lowered Inflammatory Index



Improved Omega-3 Index



Probiotics = Pro-Immunity

Three recent studies have highlighted the importance of a healthy gut microbiota (your personal gastrointestinal microbiome) to immune function and performance:

Mi·cro·bi·o·ta

noun: the community of microorganisms living in a specific environment²⁰

Modulating innate immune response: A study showed that when human cells were exposed to the probiotic *Bifidobacterium bifidum*, the transcription of certain genes was actually changed.²¹ The majority of genes that were influenced were involved in innate immune response, positively increasing the immune response and decreasing the expression of inflammatory factors.



Overlooked Essentials

Vitamins A, C, & D are widely available in the food supply, but are still found to be widely deficient. Data extracted from the National Health and Nutrition Examination Survey and published in 2014 by the Environmental Working Group (EWG) found 95% of adults are deficient in vitamin D, 51% deficient in vitamin A and 43% deficient in vitamin C.²² Aside from the overall negative health potential such deficiencies represent, all three of these are directly related to immune function and thus their deficiency points to serious risk of immune compromise.

Vitamin A: Recent research further highlights the importance of assuring adequate intake of this nutrient. In addition to its role supporting immune cell generation, vitamin A is now known to direct the action of a key group of immune cells.²³ It activates homing beacon-like receptors on cells that draw immune cells specifically to their targets.

Vitamin C: Long known for its involvement as a key element in many of the body's protective systems, including immune function, it is now thought to mitigate the decline in immune capability associated with aging. This data showed that T-cell counts, which normally decline with age, were significantly higher when vitamin C was supplemented in the diet.²⁴

Vitamin D: A research team from Ireland has shown that vitamin D deficiency is directly associated with immune compromise. "Our data indicates vitamin D may be involved in maintaining the health of the immune system as well as the skeletal system."²⁵ Assuring vitamin D adequacy in the diet is therefore essential for optimal immune function, especially as we age.



Defend with Probiotics

Regulation of the formation of blood cell components:

A research group from the California Institute of Technology showed that beneficial gut bacteria are needed for the development of cells of the innate component of our immune function; specifically the white blood cells that are our first line of defence

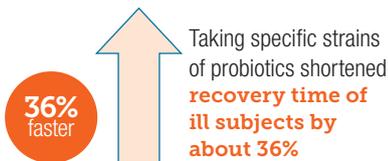


against pathogenic invaders and resultant infection.²⁶

Boosting post-event immune strength for athletes:

It is well known that intense physical activity, even amongst the best trained athletes, has a suppressive effect on immune capacity; which is why so many are subject to post-event illness. In a double-blind, placebo-controlled study it has been shown that supplementation with a probiotic including *Bifidobacterium* and *Lactobacillus acidophilus* strains boost immune defences of athletes. This is in addition to earlier studies showing shortened recovery time for ill subjects by about 36%.²⁷

Recovery Time



Acidophilus Plus

Proprietary blend of five types of clinically proven probiotics including *Bifidobacterium bifidum* and *Lactobacillus acidophilus* for gut health and digestive balance. Exclusive Gel-Gard™ Enteric protection system guarantees delivery of beneficial cultures.

#646 – 60 capsules

Pay less, get more.
Your daily dose of probiotics

Five billion 'live' microorganisms in one capsule of Acidophilus Plus - the same as in 10 servings of yoghurt!



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