



Health and Immunity

ALIVITpharm



PHYTOTHERAPY FOR IMMUNE SYSTEM

THE IMMUNE SYSTEM: A COMPREHENSIVE GUIDE TO FUNCTION,
SUPPORT, AND ENHANCEMENT
YOUR BODY'S NATURAL DEFENSE

botanical treasures offer a wide range of bioactive compounds that
contribute to health and wellness.

Summary of Contents

- 01 **The Role of the Immune System in Health and Disease**
Overview of innate and adaptive immunity, immunoregulation, and immune dysfunction in infections, allergies, and autoimmunity.
- 02 **Phytotherapy and Herbal Extracts in Immunomodulation**
Scientific rationale and mechanisms of action for medicinal plants with immunostimulatory and anti-inflammatory effects.
- 03 **Key Micronutrients in Immune Function: Selenium, Zinc, Vitamin C and Vitamin D3**
Biochemical and physiological roles of essential micronutrients in supporting immune response and preventing immune dysregulation.
- 04 **BLACK GARLIC Imunno Active**
Product Overview and Target Indications
Active Herbal Components and Their Role
- 05 **Vitamin D**
The Role of Vitamin D in Immune Function, Bone and Muscle Health
- 06 **Vitamin D3 4000IU**
Product Overview and Target Indications

Clinical Relevance

The immune system is a vital protective barrier for the body and plays a central role in maintaining health. Its ability to recognize and neutralize harmful influences such as infections, toxins, and inflammatory processes is crucial for preventing many acute and chronic diseases. Modern medicine increasingly emphasizes prevention, as research has shown that investing in health preservation and strengthening natural defense mechanisms is far more effective than treating diseases once they have developed. In this context, phytotherapy can be an important tool. Herbal preparations work through various mechanisms: they enhance resistance to external factors, help reduce oxidative stress, alleviate chronic inflammation, support a balanced immune response, and aid in the body's detoxification process.



Immune System

A Complex and Sophisticated Defence Mechanism

The immune system is a complex and sophisticated defense mechanism that plays a vital role in recognizing and neutralizing harmful microorganisms, toxins, and other foreign agents, thereby safeguarding the health and vitality of the entire body. It comprises a wide range of cells, tissues, and organs, including lymph nodes, the spleen, bone marrow, the thymus, and various blood cells. These components work together closely to protect the body not only from infections but also from damaged or malignant cells. The primary function of the immune system is to distinguish between self and non-self, responding only to elements that may disrupt the body's internal balance.

Challenges to Immune Function in Modern Life

In contemporary society, individuals are increasingly exposed to chronic stress, environmental pollution, poor nutrition, and fatigue, all of which can weaken or overload the immune system. As a result, people experience more frequent infections, slower recovery rates, autoimmune disorders, and chronic inflammatory conditions. While immune impairment may not be immediately noticeable, over time, it leads to reduced resistance, diminished energy levels, and heightened vulnerability to daily environmental challenges. For this reason, increasing attention is being devoted to preventative health measures and immune support strategies, aimed at preserving the body's natural ability to defend and regenerate itself.

A healthy immune system does not operate in isolation; it is closely connected to other regulatory systems, especially the endocrine and nervous systems. For instance, chronic stress and high levels of cortisol can greatly weaken immune responses. On the other hand, a diet rich in antioxidants, vitamins, and plant compounds can enhance immune resilience.

The advantages of herbal preparations stem from their natural origin, potential for long-term use, and lower likelihood of adverse effects compared to synthetic medications. When used under professional guidance herbal extracts can offer valuable support to the immune system. They can be beneficial for prevention during infection seasons, as an aid during recovery, for general health maintenance, or as a complementary treatment for allergies.

Nutritional Support

A diet rich in antioxidants, vitamins, and plant compounds supports immune resilience and helps maintain optimal immune function even during challenging periods.

Herbal Extracts and Immune Modulation

Herbal extracts are concentrated active compounds derived from medicinal plants that offer immune-modulating effects, assisting in the regulation and support of the immune system. Certain extracts function by enhancing immune defence mechanisms, stimulating the activity of white blood cells and antibody production, whereas others exhibit anti-inflammatory properties, which help prevent excessive immune reactions, particularly in autoimmune conditions. Among the most studied medicinal plants used for this purpose are ginger, garlic, turmeric, and elderberry, all of which are known for their beneficial effects on immune resilience and recovery.



Stress Impact

Chronic stress elevates cortisol levels which can significantly suppress immune responses, making the body more vulnerable to infections and slowing recovery times.

Prevalence of Infections and the Importance of Botanical Extracts in Modern Medicine

Infections represent a significant challenge in contemporary healthcare, further exacerbated by growing restrictions on the use of antibiotics. The widespread emergence of antibiotic resistance has created an urgent need for alternative therapeutic strategies, leading to renewed scientific interest in the antibacterial properties of botanical extracts. The indiscriminate use of antibiotics is a major contributing factor to the increase in microbial resistance, reinforcing the necessity of exploring plant-derived compounds that exhibit broad-spectrum antimicrobial activity.

Recent studies highlight the promising antibacterial potential of numerous botanical extracts against common pathogens, demonstrating their ability to inhibit bacterial growth and simultaneously stimulate immune responses. This dual mechanism—where botanical extracts function both as antimicrobial agents and immune modulators—underscores their relevance in reducing the prevalence of infections and mitigating the impact of antibiotic resistance. Unlike conventional antibiotics, which target bacteria directly, botanical extracts may exert a multifaceted influence by both disrupting microbial proliferation and enhancing the body's natural defence mechanisms, ultimately contributing to improved infection management.

Beyond their intrinsic antibacterial properties, botanical extracts show promise in enhancing the efficacy of existing antibiotics. Research suggests that synergistic interactions between specific plant-derived compounds and antibiotic formulations lead to improved therapeutic outcomes, particularly in combatting multidrug-resistant (MDR) bacterial strains. The exploration of such combinations could serve as a critical step in addressing the global health crisis posed by antibiotic resistance, offering novel treatment strategies that harness the complementary effects of both natural and conventional pharmacological approaches.

A further advantage of botanical extracts lies in their potential application beyond antimicrobial therapy, particularly in the management of allergic conditions. Numerous studies indicate that certain plant-based preparations may help alleviate allergic symptoms through their immune-modulating properties.



Numerous studies indicate that certain plant-based preparations may help alleviate allergic symptoms through their immune-modulating properties. Notably, some botanical extracts have been found to promote immune balance, particularly by influencing the activity of T-helper cells. By strengthening the Th1 immune response, these compounds can help regulate Th2-mediated allergic reactions, thereby reducing the severity of various allergic manifestations. This ability to modulate immune function enhances the therapeutic versatility of botanical extracts, making them valuable not only in infection control but also in managing immune-related disorders.

The long-standing use of medicinal plants in traditional healing practices, coupled with growing scientific validation of their efficacy, highlights the safety and reliability of botanical extracts in modern healthcare applications. In contrast to synthetic pharmaceuticals, which often carry a higher risk of adverse effects, botanical extracts are generally associated with lower toxicity and greater suitability for prolonged use, thereby facilitating their integration into contemporary medical protocols. Their natural origin and multifunctional properties position them as promising adjuncts in both preventative health strategies and therapeutic interventions.

Phytotherapy – A Natural Approach to Immune System Support

Given the limitations of conventional approaches to the prevention and treatment of infections, influenza, and allergic conditions, the importance of phytotherapy as an effective complementary method has become increasingly recognised. Botanical extracts and bioactive compounds derived from nature play a significant role in strengthening the immune system, improving the body's resilience, and alleviating symptoms of various infections and allergies.

Due to their natural composition and long-standing use in traditional medicine, botanical preparations represent a safe and effective adjunct to modern therapeutic approaches for infection, influenza, and allergy management. Their application not only aids in symptom relief but also contributes to enhanced immune resilience, making them a key element in a holistic health approach.

Mechanisms of Action of Immuno Active Formulation

1. Fermented Garlic Extract – Natural Immune Support and Infection Resistance

The fermented garlic extract (FGE), derived from *Allium sativum*, has gained attention for its potential in enhancing immune function and providing antiviral support, particularly against seasonal influenza. The fermentation process significantly increases the bioavailability of active compounds such as allicin, polysaccharides, polyphenols, and antioxidants, transforming garlic into a functional food with multifaceted benefits.

One of the key components of fermented garlic is allicin, a compound linked to its ability to inhibit viral attachment to host cells, reduce viral replication, and enhance antiviral defence. In addition, fermentation boosts quercetin, a flavonoid known for its potential to impede viral entry into cells, making it especially relevant in influenza infections.

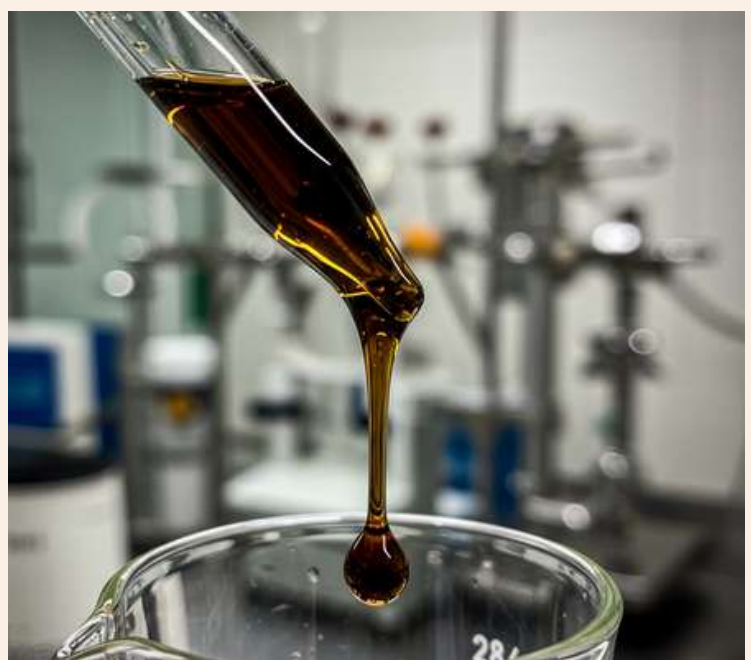
Beyond its direct antiviral effects, FGE stimulates immune cell activity, including macrophage function, increases phagocytic efficiency, and promotes the production of key cytokines such as TNF-alpha and IL-6, strengthening both innate and adaptive immune responses. Furthermore, stable nitrates generated through fermentation may enhance circulation via nitric oxide pathways, contributing to improved immune performance.

Equally important is its antioxidant capacity. S-Allyl Cysteine (SAC), a compound found in fermented garlic, helps reduce oxidative stress, a factor often associated with viral infections and immune suppression. Increased antioxidant availability can also decrease inflammatory markers, proving beneficial for chronic inflammatory conditions.



Clinical observations suggest that fermented garlic may also offer metabolic health benefits, including supporting blood pressure regulation and lipid profile balance, both of which influence overall immune function. Additionally, studies have reported higher levels of secretory IgA in saliva following FGE consumption, indicating enhanced mucosal immunity, a critical line of defence against respiratory infections.

In summary, fermented garlic operates on multiple levels: enhancing immune cell activity, reducing oxidative stress, maintaining metabolic balance, and supporting the body's defence mechanisms. As a natural, safe, and highly beneficial dietary supplement, FGE is increasingly recognised as a valuable ally in maintaining health and resilience against seasonal and viral infections.



Mechanisms of Action of Immuno Active Formulation

2. Elderberry – Natural Immune Support and Antiviral Defence



Elderberry (*Sambucus nigra*) is renowned for its powerful effects on immune function, attributed to its rich composition of bioactive compounds that act through multiple biochemical mechanisms. Elderberry extract demonstrates strong immunomodulatory properties, making it a widely used nutritional supplement for immune support, particularly in viral infection prevention and management.

A primary mechanism through which elderberry exerts its immune-enhancing benefits is its modulation of cytokine production—signalling molecules essential for regulating immune responses. Elderberry extracts have been shown to increase secretion of key pro-inflammatory cytokines, such as TNF-alpha, IL-6, and IL-8, which play a pivotal role in activating immune defences. Additionally, elderberry stimulates monocyte activation, promoting cellular immune response, thereby strengthening the body's defence against pathogens.

The antiviral properties of elderberry are particularly notable in relation to influenza and other respiratory viruses. Research indicates that elderberry extracts inhibit viral replication and prevent viral attachment to host cells, thereby reducing infection risk. This effect is largely attributed to anthocyanins and flavonoids, potent antioxidants that also help mitigate oxidative stress, which can weaken immune function, especially during viral infections.

Regarding direct antiviral effects, elderberry extracts have been shown to block viral proliferation by preventing viral entry into host cells and suppressing replication. Studies suggest that elderberry extract reduces SARS-CoV-2 replication in laboratory settings, indicating its potential to prevent viral invasion and multiplication. Time-course experiments further suggest that elderberry compounds act at multiple stages of the viral lifecycle, affirming its broad-spectrum antiviral potential. Other research has demonstrated elderberry's ability to inhibit influenza A viruses, both by direct viral suppression and immune enhancement.

Furthermore, elderberry extracts have been found to enhance dendritic cell function, which is crucial for pathogen recognition and T-lymphocyte activation. This stimulation of adaptive immunity may contribute to enhanced protection against infections or reduced symptom severity. Additionally, elderberry-derived polysaccharides have been reported to boost immune cell activation, ensuring a more robust immune response.



3. Ginger – A Natural Support for Immune Function

Ginger (*Zingiber officinale*) is a plant extensively studied for its immune-modulating effects, primarily due to its rich composition of bioactive compounds, such as gingerols and shogaols. These compounds exhibit potent antioxidant, anti-inflammatory, and immunostimulatory properties, contributing to overall health maintenance and immune system reinforcement. Ginger has been thoroughly researched for its role in regulating immune responses via the nuclear factor kappa B (NF- κ B) signalling pathway, a key transcription factor controlling gene expression related to inflammation, immunity, and cell survival. NF- κ B activation is a central event leading to the production of pro-inflammatory cytokines, including IL-1 β , TNF- α , and IL-6, molecules that orchestrate immune responses. This pathway is most commonly activated by pathogen-associated molecular patterns (PAMPs), which are recognised by immune cell surface receptors, such as toll-like receptors (TLRs). Once activated, I κ B proteins, responsible for keeping NF- κ B inactive in the cytoplasm, undergo phosphorylation and degradation, releasing active NF- κ B, which subsequently translocates into the nucleus and binds to specific DNA

sequences, initiating inflammatory gene transcription. Bioactive compounds in ginger, particularly gingerols and shogaols, play a crucial role in immune modulation by inhibiting NF- κ B activation, preventing I κ B α phosphorylation, and reducing pro-inflammatory cytokine production—factors often elevated in chronic inflammation, autoimmune diseases, and certain malignancies.

Ginger also modulates toll-like receptors (TLRs), particularly TLR4, which is essential for innate immune defence and pathogen recognition. By blocking NF- κ B translocation, it helps suppress inflammatory gene expression, promoting immune system balance.

Additionally, ginger enhances immune function by stimulating macrophage phagocytic activity, improving lymphocyte response, and increasing antibody production, thereby strengthening immune defences and accelerating recovery post-infection. It further supports glucose metabolism, helping to stabilise blood sugar levels, which is vital for overall immune resilience.

As a prebiotic, ginger contributes to gut microbiota balance, reinforcing mucosal immunity. Since a significant portion of immune function originates in the digestive tract, maintaining a healthy microbiome is key to long-term infection resistance.

Mechanisms of action of the Immuno Active supplement

4. Rosehip – Natural Immune Support and Antioxidant Protection

Rosehip, especially that from *Rosa canina*, is increasingly recognized for its positive effects on immune health, primarily due to its rich nutritional profile. It contains high levels of vitamin C, antioxidants, and phenolic compounds, all of which are essential for enhancing immune function and protecting the body from oxidative stress. Vitamin C, one of the most important components of rosehip, is well known for its immunomodulatory effects. It stimulates the proliferation of immune cells and enhances phagocytic activity, which increases the body's resistance to infections. Additionally, it promotes the activity of leukocytes, which play a crucial role in immune defense. Dietary intake of rosehip has been associated with improved immune markers, as evidenced by various animal studies. Beyond vitamin C, the strong antioxidant capacity of rosehip is also due to its phenolic compounds and carotenoids. These bioactive substances help neutralize free radicals and exhibit significant anti-inflammatory effects. Studies have shown that rosehip extracts can reduce inflammatory markers in the body, which may be beneficial in chronic inflammatory conditions such as arthritis. Furthermore, rosehip possesses antibacterial and antiviral properties, strengthening the body's natural defenses. These properties support its traditional use in treating colds and inflammatory conditions. In conclusion, rosehip, with its high vitamin C content and antioxidant compounds, is a valuable natural ally for immune health and reducing inflammation. Its diverse biochemical properties make it an effective dietary supplement for preventing infections and protecting against oxidative stress.



5. Selenium – A Key Micronutrient for Immune System Health

Selenium (Se) is an essential trace element that plays a critical role in immune system regulation, primarily through its involvement in selenoproteins. These proteins, which incorporate selenium into their structure, are crucial for antioxidant protection and various cellular processes. Selenoproteins contribute to oxidative stress regulation and immune responses, directly influencing the body's ability to combat infections and inflammatory conditions.

Adequate selenium intake is fundamental for proper immune function, as deficiency can lead to immune dysregulation, increasing susceptibility to infections and disrupting inflammatory balance.

Impact on Immune Cells

Studies indicate that selenium significantly affects T-cell and macrophage function, both of which are key players in immune defence. Selenium supplementation has been associated with enhanced lymphocyte activity, suggesting that selenoproteins support both humoral (antibody-mediated) and cellular immunity. One of selenium's most important roles is in the activation of glutathione peroxidases (GPs)- enzymes that protect cells from oxidative damage, thereby preserving immune function under stressors such as viral infections and toxins.

Mechanism of Action within Glutathione Peroxidase

GPs are among the primary antioxidant enzymes, distinguished by their selenocysteine-containing structure. This selenocysteine residue is essential for the catalytic activity of GPs, enabling effective peroxide reduction in tissues. Selenium enhances enzymatic capacity, improving the use of glutathione (GSH) as a reducing agent. During this process, GSH oxidises to glutathione disulphide (GSSG), which is subsequently recycled back into GSH via glutathione reductase, forming a crucial cycle in cellular antioxidant defence.

GP Antioxidant System Functions

- **Substrate Binding:** Selenium-dependent GPs interact with hydrogen peroxide or lipid peroxide compounds.
- **Reduction Process:** Using thiol groups from glutathione, GPs catalyse peroxide reduction, converting hydrogen peroxide into water while glutathione oxidises into GSSG. This reaction preserves cellular integrity and prevents lipid peroxidation, which can otherwise lead to cell damage or dysfunction.

Protection Against Oxidative Stress

The role of selenium in boosting GP activity is particularly valuable in conditions associated with oxidative stress. Selenium supplementation has been shown to enhance GP function and reduce oxidative damage markers, such as malondialdehyde (MDA). Research across animal and human models supports its effectiveness in lowering oxidative stress levels.

Immunomodulatory Effects

Selenium also plays a role in regulating pro-inflammatory cytokine production, molecules central to immune response coordination. Studies confirm that selenium can reduce inflammatory cytokine levels, highlighting its immune-modulating properties. Additionally, selenium enhances phagocytic activity, influences nitric oxide production in macrophages, and increases immune cell populations, including natural killer (NK) cells.

Mechanisms of Action of Immuno Active Formulation

6. Zinc – An Essential Mineral for a Strong Immune Response

Zinc is a vital trace element that plays a central role in immune system function, influencing multiple pathways critical to immune processes. It affects both innate and adaptive immunity by modulating the activity of various immune cells. The immunological effects of zinc are mediated through the regulation of gene expression, signaling pathways, and cellular balance.

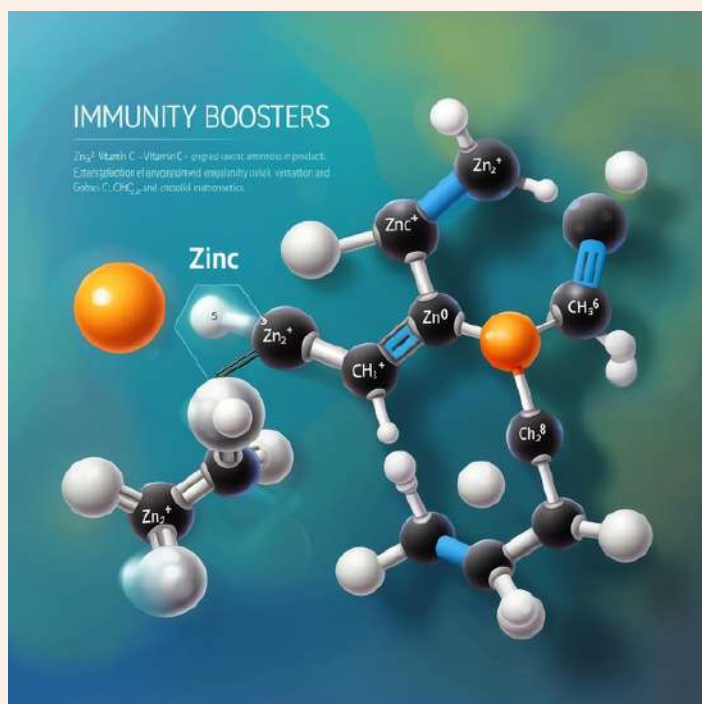
Zinc plays a crucial role in the immune system by modulating inflammatory signaling pathways, particularly by inhibiting the NF- κ B pathway, which controls the production of inflammatory cytokines. This inhibition helps zinc exert anti-inflammatory effects and prevents excessive or harmful immune responses, making it especially important for individuals with autoimmune conditions. Zinc is also essential for the activation and proliferation of T lymphocytes. It is involved in intracellular signaling, particularly through the Akt-mediated pathway, and enhances the response to interleukin-2 (IL-2), a cytokine critical for T-cell activation and differentiation. A deficiency in zinc can impair T-cell responses, increase susceptibility to infections, and reduce the efficacy of vaccines. Additionally, zinc is involved in intracellular signaling mechanisms through metallothioneins—proteins that bind to zinc within the cell and release it during oxidative stress. This release promotes further immune responses and fine-tunes immune processes in adaptive immunity. Zinc also supports the development and function of regulatory T cells (Tregs), which are essential for maintaining immune balance and preventing excessive inflammation. Supplementing with zinc may increase both the number and activity of these cells, thereby reducing the risk of autoimmune disorders. This action is mediated by the regulation of transcription factors, such as Foxp3, which are crucial for Treg cell development. In summary, zinc has a complex and indispensable role in maintaining immune health. By modulating key signaling pathways, supporting T-cell function, regulating inflammation, and preserving cellular balance, zinc is a vital nutrient for defending against infections and maintaining immunological stability.

Adequate intake of vitamin C enhances chemotaxis, which is the movement of immune cells toward infection sites. It also boosts oxidative burst activity and supports overall neutrophil function—critical factors in combating infections. Additionally, vitamin C's antioxidant properties help neutralize reactive oxygen species produced during immune responses. This protection allows immune cells to function efficiently without damage.

Vitamin C plays a crucial role in collagen synthesis, which is essential for maintaining the structural integrity of the skin and mucous membranes. These surfaces serve as the body's first line of defense against pathogens, and by supporting these physical barriers, vitamin C helps prevent the entry of infectious agents. In addition, vitamin C affects the expression of pro-inflammatory cytokines and transcription factors that regulate immune responses. It has been shown to stimulate cytokines, such as TNF-alpha, which are vital for initiating and regulating inflammation. This makes vitamin C particularly beneficial for individuals with weakened immune systems, including those suffering from viral infections and respiratory illnesses. Another important function of vitamin C is the stimulation of antibody production, which enhances the adaptive immune response. This contributes to greater efficacy of vaccines and improved resistance to infections. For these reasons, vitamin C is often recommended as a dietary supplement for individuals at higher risk of infections or those with insufficient dietary intake. In conclusion, vitamin C is essential for optimal immune function. It supports white blood cell activity, combats oxidative stress, and regulates immune signaling, highlighting its importance in the prevention and management of infections.

7. Vitamin C – A Key Ally of the Immune System

Vitamin C, also known as ascorbic acid, is a vital micronutrient that plays a significant role in maintaining and strengthening the immune system. It operates at multiple levels of immune defense, supporting both innate and adaptive immunity. Additionally, it is well-known for its powerful antioxidant properties, which help enhance immune cell function and regulate essential immune pathways. One of the key functions of vitamin C is its impact on leukocyte (white blood cell) activity. It boosts the effectiveness of phagocytic cells, such as neutrophils and macrophages, enhancing their ability to identify, engulf, and eliminate pathogenic microorganisms. Furthermore, vitamin C contributes to the development and proliferation of T lymphocytes and natural killer (NK) cells, which are crucial for adaptive immune responses.



Mechanisms of action of the Immuno Active supplement

8. Vitamin D3 – A Key Regulator of the Immune System

Vitamin D3, also known as cholecalciferol, is an essential nutrient with pronounced immunomodulatory effects. Its active form, 1,25-dihydroxyvitamin D3, plays a crucial role in regulating multiple immune pathways, contributing to immune balance and stability. Vitamin D3 influences both innate and adaptive immunity, interacting with various immune cells, including T lymphocytes, B lymphocytes, monocytes, and dendritic cells.

Mechanisms of Action

One of the primary mechanisms through which vitamin D3 exerts its effects is its binding to the vitamin D receptor (VDR). Upon activation, VDR regulates the expression of genes involved in immune function. For example, vitamin D3 can slow dendritic cell maturation and reduce antigen presentation capability, thereby promoting immune tolerance. This modulation directly affects T cell differentiation, favouring the development of regulatory T cells, which are crucial for suppressing autoimmune and inflammatory processes.

Vitamin D3 also influences cellular signalling pathways associated with inflammatory responses, particularly the NF- κ B pathway. Through this pathway, vitamin D3 can reduce the production of pro-inflammatory cytokines, such as TNF-alpha and interleukin-6, thereby mitigating inflammatory reactions. Studies have shown that individuals supplementing with vitamin D3 exhibit lower levels of these cytokines in various inflammatory conditions.

Additionally, vitamin D3 stimulates the production of antimicrobial peptides, such as cathelicidin and defensins, which form a key component of innate immune defence. These peptides possess direct antimicrobial properties, eliminating pathogens while regulating local inflammatory responses. Their synthesis is influenced by vitamin D through gene expression control.

Recent studies suggest that vitamin D3 may also participate in RNA metabolism and gene expression regulation during immune challenges, further enhancing its ability to balance pathogen defence with immune tolerance.

Maintaining optimal vitamin D3 levels is essential for a healthy and well-regulated immune system, ensuring immune cell activity, cytokine production control, gene expression modulation, and innate immune strength.



Black Garlic IMMUNO ACTIVE

Immuno Active is a carefully formulated supplement designed to enhance the body's natural defences and strengthen immunity. Its unique blend of ingredients contributes to overall health and resilience, supporting immune function, recovery, and general well-being.

By stimulating immune cell activity, it helps the body combat bacterial, viral, and other infections more effectively. Additionally, it accelerates recovery from colds and flu, reducing symptom duration and boosting respiratory defence mechanisms. Immuno Active also plays a role in maintaining gut microbiota balance, which is essential for optimal immune function.

The supplement provides powerful antioxidant protection, shielding cells from oxidative stress, which can weaken immune responses. Furthermore, it promotes healthy immune modulation, ensuring a balanced inflammatory reaction and lowering the risk of excessive immune responses.

Beyond immune benefits, Immuno Active supports overall vitality, helping maintain energy levels and strengthen resilience, particularly during periods of stress and heightened infection risk. Unlike some immune-supporting supplements, Immuno Active does not contain echinacea, making it safe for individuals with autoimmune conditions.

Phytotherapy as Immune System Support

Comprehensive Immune Support with Immuno Active

Given the limitations of conventional methods for preventing and treating infections, influenza, and allergic conditions, phytotherapy is increasingly gaining recognition as an effective complementary strategy in modern healthcare. Unlike standard pharmaceutical approaches, which often come with a range of side effects or limited efficacy, herbal medicine offers a more natural alternative.

Herbal extracts and active natural compounds have been shown to significantly strengthen the immune system, thereby enhancing the body's ability to resist infections and illnesses. They work by modulating immune responses, reducing inflammation, and improving overall vitality. Research has indicated that certain herbs possess antiviral, antibacterial, and antihistamine properties, which can help alleviate the symptoms associated with various infections and allergic reactions.

Moreover, the use of herbal preparations is bolstered by their natural ingredients and a long-standing history in traditional medicine practices across cultures. This rich heritage underscores their safety and effectiveness as adjuncts to contemporary therapies. Unlike many synthetic medications, which may come with unwanted side effects, herbal remedies can often provide relief with minimal risk to the patient.

Incorporating phytotherapy into treatment plans not only addresses immediate symptoms but also fosters the enhancement of the body's overall defenses.



This holistic approach to health emphasizes the interconnectedness of physical well-being and the natural world, advocating for a balanced lifestyle that includes the use of herbal remedies as a means of supporting the immune system. Ultimately, the integration of phytotherapy into modern health care can serve as an essential element of a comprehensive strategy aimed at promoting wellness and preventing illness. By utilizing herbal solutions alongside standard treatments, individuals may find a more effective path toward achieving optimal health and well-being.

Dual Action of Herbal Extracts

Findings suggest that herbal extracts not only inhibit bacterial growth but can also stimulate immune responses, functioning simultaneously as antimicrobial agents and immunomodulators. This dual action offers substantial potential for reducing infection frequency and managing microbial resistance more effectively.

The natural origin and long-standing use of medicinal plants in traditional healing systems support their safety and therapeutic potential. Given the increasing body of evidence supporting their effectiveness and lower toxicity compared to synthetic drugs, herbal extracts can be successfully integrated into modern treatment protocols for infectious diseases.

Synergistic Effects

Additionally, herbal extracts may enhance the efficacy of existing antibiotics. Synergistic effects observed between specific plant compounds and antibiotics have led to improved therapeutic outcomes in combating multi-drug resistant (MDR) bacterial strains. Research into such combinations could prove crucial in addressing the global health crisis posed by antibiotic resistance.

Vitamin D

Role in Immune System, Bone and Muscle Health

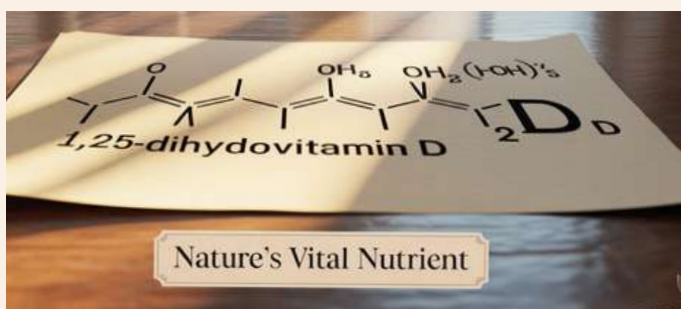
Vitamin D, especially in its active form known as 1,25-dihydroxyvitamin D ($1,25(\text{OH})_2\text{D}$), is crucial for overall health. It has a wide range of physiological effects, including supporting the immune system and promoting the health of bones and muscles. Additionally, it plays a role in various biological processes that are essential for the body to function normally.

Vitamin D and Immunity

Vitamin D acts as a potent immunomodulatory, influencing both branches of the immune system, innate and adaptive immunity. The active form of vitamin D binds to the vitamin D receptor (VDR), present in many immune cells, including B and T lymphocytes, macrophages, and dendritic cells. Research shows that calcitriol, the active form of vitamin D, significantly impacts macrophage function, key cells of the innate immune system. Vitamin D promotes the production of receptors on macrophage surfaces that are important for recognising and clearing dead cells and debris from damaged tissues, including myelin remnants from nerve fibers. In this way, vitamin D contributes to more efficient cellular waste removal and maintenance of homeostasis.

It has also been established that vitamin D increases the number of receptors that recognise microorganisms tagged for destruction, further enhancing macrophages' ability to engulf and eliminate pathogens. Additionally, it helps direct macrophages towards a more functional phenotype that is particularly effective in fighting infections.

When vitamin D levels are insufficient, macrophage activity declines, and immune responses weaken, increasing susceptibility to infections. Hence, vitamin D deficiency is often linked to a greater propensity for illness. An important effect of vitamin D is the stimulation of antimicrobial peptides production, including cathelicidin and defensins, which protect the body from pathogens. Vitamin D also regulates the balance between pro-inflammatory and anti-inflammatory responses by suppressing Th1 cells that produce cytokines like IL-2 and IFN- γ , while simultaneously enhancing Th2 cell activity that produces IL-4 and IL-10. Through this mechanism, it helps reduce chronic inflammation and prevents autoimmune diseases.



Furthermore, vitamin D improves T lymphocyte activation, which is especially significant in elderly individuals and neonates who are often more vulnerable to infections due to diminished immune responses. It increases survival and proliferation of these cells via activation of intracellular signaling pathways, thereby strengthening the body's ability to combat infections.

The relationship between vitamin D, cathelicidin, and defensins is central to understanding innate immune responses and maintaining microbiological balance within the body. The active form of vitamin D, 1,25-dihydroxyvitamin D₃, plays a vital role in regulating the production of antimicrobial peptides, notably cathelicidins and defensins, key components of innate immunity.

Through its receptor, vitamin D directly influences the genes responsible for producing these peptides. Upon binding to its receptor within cells, vitamin D activates specific DNA regions that stimulate the synthesis of protective molecules such as cathelicidin (e.g., LL-37) and beta-defensins. These peptides are produced by various immune cells, including monocytes, neutrophils, and skin cells, helping the body to effectively fight infections.

Vitamin D deficiency correlates with decreased levels of these protective molecules, weakening the body's defence mechanisms and increasing vulnerability to infections..

Vitamin D is a vital micronutrient that plays an important role in maintaining immune, bone, and muscle health. It stimulates the production of antimicrobial peptides, regulates inflammation, enhances the function of T lymphocytes and macrophages, and ensures optimal calcium absorption, contributing to musculoskeletal integrity. It is crucial to have an adequate intake of vitamin D, whether through diet, sun exposure, or supplementation to support overall health, especially for individuals at risk of deficiency.

Cathelicidins and defensins differ in structure and mechanisms of action but together generate a powerful protective response. Cathelicidins like LL-37 are known for their ability to disrupt bacterial membranes and thus destroy pathogens. Defensins, divided into alpha and beta types, further enhance antimicrobial effects through similar but specific mechanisms. Their combined activity significantly boosts the efficiency of the innate immune system in combating a broad range of pathogens.

Within innate immunity, vitamin D promotes the phagocytic activity of monocytes and macrophages and participates in the secretion of cytokines and chemokines important for rapid immune responses. It also reduces the secretion of cytokines such as IL-6, responsible for excessive inflammatory reactions, including cytokine storm seen in severe infections like COVID-19.

Vitamin D

Immune Function, Bone and Muscle Health

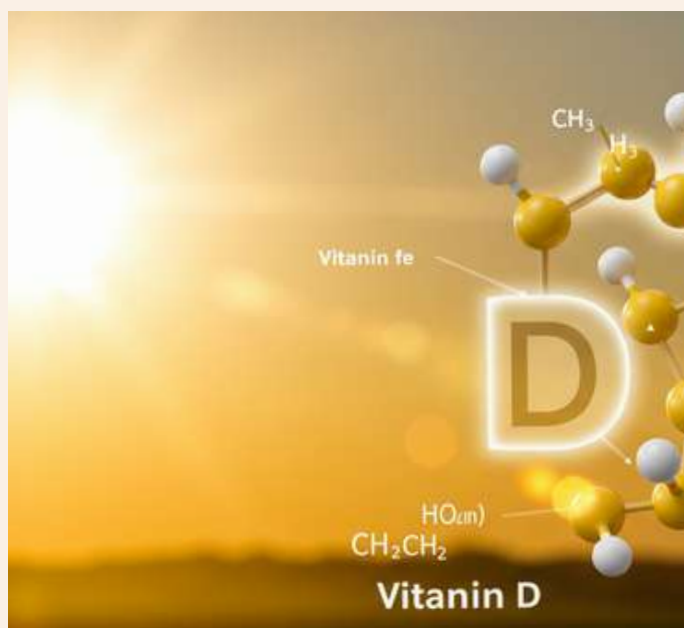
Absorption of Vitamin D

Vitamin D absorption is a complex process influenced by multiple factors like diet, the form in which vitamin D is administered, and individual metabolic differences. The two main forms used in supplementation are cholecalciferol (vitamin D3) and ergocalciferol (vitamin D2). It has been shown that vitamin D3 is more effective due to better absorption and utilization by the body.

As vitamin D is fat-soluble, dietary fat intake plays an important role in its absorption. When vitamin D is consumed with a fat-rich meal, its bioavailability significantly improves. Fats stimulate bile secretion, which aids in micelle formation—small particles that facilitate vitamin D absorption through the intestinal mucosa. For example, it has been demonstrated that blood vitamin D levels rise significantly more when D3 is taken with a substantial fatty meal compared to a low-fat meal.

In conclusion, achieving optimal vitamin D levels requires considering multiple factors — taking it with fatty food, choosing the better absorbed form (preferably D3), and adjusting intake according to individual needs and health status. This approach ensures sufficient vitamin D levels, critical for bone health and proper bodily function.

In conclusion, achieving optimal vitamin D levels requires considering multiple factors, taking it with fatty food, choosing the better absorbed form (preferably D3), and adjusting intake according to individual needs and health status. This approach ensures sufficient vitamin D levels, critical for bone health and proper bodily function.



Vitamin D, Bones, and Muscles

Beyond its immunological importance, vitamin D is essential for bone and muscle health. Its most recognised function lies in regulating calcium and phosphorus metabolism — minerals necessary for building and maintaining strong bones. The active form of vitamin D facilitates calcium absorption from the intestines, contributing to optimal mineralisation of bone tissue.

Vitamin D influences osteoblasts (bone-forming cells) and osteoclasts (bone-resorbing cells), maintaining a balance between their activities, thus preventing conditions such as osteoporosis, osteomalacia in adults, and rickets in children.

Adequate vitamin D levels promote growth and mineralisation of new bone, whereas deficiency leads to reduced bone density and increased fracture risk.

The interaction of calcitriol with other signaling molecules is extremely important. The regulation of transcription factors, such as Runx2, plays a crucial role in osteoblast differentiation, which is essential for directing cells toward the osteoblastic lineage. Research has shown that calcitriol increases the expression of genes associated with osteoblast function, including osteocalcin and alkaline phosphatase. Furthermore, the effects of vitamin D on osteoblast activity involve complex mechanisms that regulate calcium homeostasis and bone remodeling. It has been observed that vitamin D can suppress bone resorption by osteoclasts through its action on mature osteoblasts, which in turn influences bone density within the context of vitamin D signaling.

Regarding muscles, vitamin D plays a key role in preserving muscle strength and function. Vitamin D receptors are present in muscle cells, and its presence enhances muscle strength, mobility, and reduces fall risk, particularly in the elderly population. It is also believed that vitamin D participates in muscle regeneration and growth processes, thereby helping to prevent sarcopenia (age-related muscle mass loss).

Vitamin D is an essential micronutrient central to maintaining immune system health, as well as bone and muscle integrity. It stimulates the production of antimicrobial peptides, regulates inflammatory processes, enhances T lymphocyte and macrophage function, and enables optimal calcium absorption and preservation of musculoskeletal mass. Ensuring adequate vitamin D intake through diet, sun exposure, or supplementation is vital for overall health, especially in populations at risk of deficiency.

Vitamin D4000 IU

Optimal Support for Health with Vitamin D

Optimising Absorption: The Olive Oil Advantage

This formulation contains vitamin D dissolved in high-quality olive oil which significantly enhances its bioavailability and facilitates optimal absorption in the gastrointestinal tract. As a fat-soluble vitamin, vitamin D requires the presence of dietary fats for efficient absorption. Olive oil not only serves as an excellent natural carrier but also contributes antioxidant properties that help maintain the stability and potency of the formulation. This combination ensures that the vitamin D is more readily absorbed into the bloodstream, thereby increasing its overall efficacy in supporting immune function, bone health, and muscle strength.

By supporting the efficient absorption of calcium and phosphorus, vitamin D plays a central role in maintaining strong bones and proper muscle function. Its active form also contributes to immune system regulation, helping to enhance the body's natural defences while maintaining immunological balance. In this formulation, high-quality olive oil serves as a natural carrier, significantly improving intestinal absorption and ensuring that vitamin D is utilised effectively within the body. This combination not only increases the bioavailability of the vitamin but also enhances the overall efficacy of supplementation.

The vitamin D in this preparation is dissolved in high-quality olive oil, ensuring maximum bioavailability and efficacy within the body.



4000 IU: A Safe and Effective Daily Dose

A daily intake of 4000 IU of vitamin D is widely recognised as both optimal and safe for adults with increased physiological needs. This includes individuals with limited sun exposure, older adults whose skin synthesis of vitamin D is reduced, people with higher body mass index, and those suffering from malabsorption syndromes. Such a dosage supports a robust and balanced immune response, helps maintain healthy bones and muscles, and remains well within established safety thresholds.

This formulation is delivered in a soft gelatin capsule made from bovine gelatin, specifically designed to dissolve efficiently within the digestive tract. This allows for rapid release and optimal uptake of vitamin D into the bloodstream. Moreover, the vitamin is suspended in high-quality olive oil, a natural fat-soluble medium that significantly enhances intestinal absorption. In addition to serving as an effective carrier, olive oil offers antioxidant protection, contributing to the overall stability of the preparation and extending its shelf life without the need for synthetic preservatives.

Phytotherapy: Nature's Immune Support

Common Immune-Supporting Herbs

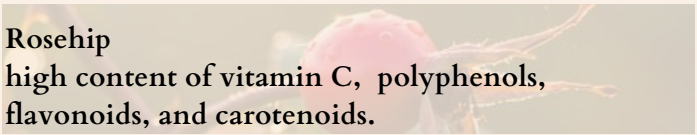
Ginger

Known for its anti-inflammatory and antioxidant properties that help boost overall resilience.



Garlic

Contains compounds that enhance immune cell activity and provide antimicrobial benefits.



Rosehip

high content of vitamin C, polyphenols, flavonoids, and carotenoids.



Elderberry

Rich in antioxidants and known to help accelerate recovery from respiratory infections.



Infection Prevalence and Herbal Alternatives

Infections pose a significant challenge to modern healthcare, and this issue is further complicated by increasing restrictions on antibiotic usage. The rise of antibiotic resistance has created an urgent demand for alternative therapeutic approaches, leading to a renewed interest in the antibacterial properties of herbal extracts. The misuse of antibiotics is directly linked to the rise in microbial resistance, underscoring the importance of identifying plant-derived compounds that exhibit a broad range of antimicrobial activity. Recent studies have demonstrated that many herbal extracts show promising antibacterial efficacy against common pathogens.

Recent studies have shown that many herbal extracts have promising antibacterial properties against common pathogens. Findings indicate that these extracts not only inhibit bacterial growth but may also stimulate immune responses, acting as both antimicrobial agents and immunomodulators. This dual action has significant potential for reducing the frequency of infections and managing microbial resistance more effectively.

Additionally, herbal extracts may enhance the effectiveness of existing antibiotics. Synergistic effects observed between certain plant compounds and antibiotics have resulted in improved therapeutic outcomes when combating multi-drug resistant (MDR) bacterial strains. Research into these combinations could be crucial in addressing the global health crisis posed by antibiotic resistance.

The natural origin and long-standing use of medicinal plants in traditional healing systems support their safety and therapeutic potential. With the growing body of evidence highlighting their effectiveness and lower toxicity compared to synthetic drugs, herbal extracts can be successfully integrated into modern treatment protocols for infectious diseases.

In conclusion, it is vital to research and scientifically validate the efficacy of herbal extracts as alternative therapeutic agents. These compounds provide a new, sustainable, and holistic approach to infection control, aligning with contemporary health trends. As our understanding continues to evolve, herbal extracts may play a pivotal role in tackling the increasing threat of antibiotic resistance and ensuring more effective public health protection against complex infectious challenges.

Plant-Based Immune Protection, and Beyond



A well-functioning immune system relies on a carefully balanced interplay of cellular responses, anti-inflammatory regulation, and oxidative stress control. This balance can be disrupted by factors such as chronic infections, stress, aging, and nutrient deficiencies, leading to a weakened immune defense or heightened inflammation.

Integrating phytotherapy with micronutrition provides a science-based, holistic approach to supporting the immune system. Medicinal plant extracts like echinacea, garlic, astragalus, cat's claw, and reishi have shown the ability to modulate immunity on multiple levels. These extracts can enhance innate defense, promote antiviral activity, support anti-inflammatory pathways, and regulate cytokine production. Such effects are crucial for preventing the transition from acute to chronic inflammation and for managing allergies and autoimmune conditions.

Key micronutrients, including selenium, zinc, vitamin C, and vitamin D3, serve as essential biochemical foundations for immune cell function, oxidative protection, and immune regulation. Their roles are complementary and synergistic, contributing to:

- Protection against respiratory and viral infections
- Modulation of inflammatory processes
- Antioxidant defense and tissue repair
- Support for immune recovery in vulnerable individuals

By combining standardized herbal extracts with optimal levels of key micronutrients, we can develop a comprehensive strategy to:

- Enhance immune resilience
- Reduce the risk and severity of infections
- Support the resolution of immune-mediated disorders

This integrative approach is especially relevant today, where immune challenges are frequent, complex, and often linked to lifestyle and environmental stressors.

In conclusion, evidence-based phytotherapy, paired with essential micronutrient support, offers a safe, natural, and effective way to restore immune balance and protect overall health.

Vitamin D is a vital micronutrient that plays an important role in maintaining immune, bone, and muscle health. It stimulates the production of antimicrobial peptides, regulates inflammation, enhances the function of T lymphocytes and macrophages, and ensures optimal calcium absorption, contributing to musculoskeletal integrity. It is crucial to have an adequate intake of vitamin D, whether through diet, sun exposure, or supplementation to support overall health, especially for individuals at risk of deficiency.

2025

SYNERGY IN SUPPLEMENTS

WHAT DOES INGREDIENT SYNERGY MEAN IN A SUPPLEMENT?

SYNERGY MEANS BETTER RESULTS WITH LOWER DOSES

SMART COMBINATIONS – THE BODY RESPONDS BETTER TO
TEAMWORK THAN TO RANDOMNESS



The true efficacy of a supplement lies not only in its ingredients, but in the way those ingredients work together. Our formulations are crafted to ensure that each component plays a defined role in a synergistic system, enhancing overall health outcomes



BETTER ABSORPTION AND
EFFECTIVENESS

COMPREHENSIVE ACTION ACROSS
BODY SYSTEMS

REDUCED SIDE EFFECTS

ALIVITpharm

Crnogorski put 2A
88380 Ljubinje
Bosnia and Herzegovina

Bulevar Nikole Tesle 30A
11080 Beograd
Serbia

<https://www.alivitpharm.com/en/>
