# First Line Immune Defense

tomorrow's leaf®

## Clinical Applications

- Antioxidant Support*
- Supports Healthy Immune Function*
- Supports the Body's Defenses Against Seasonal Immune Challenges*

*Each **First Line Immune Defense** capsule features the same concentrated, naturally derived beta 1,3/1,6 glucan used in Derm One's Glucan formulas, plus standardized olive leaf extract and vitamin C as ascorbic acid. These ingredients support the body's natural immune mechanisms to help maintain good health. This formula is designed to be taken short term.**

All Derm One Formulas Meet or Exceed cGMP Quality Standards

Distributed by: DermOne Health + Wellness
Franklin, Tennessee, 37064
Tomorrowsleaf.com
615-333-0662
Hello@BestCleanBeauty.com

## Discussion

Every day, whether by choice or by chance, millions of people encounter physical, emotional, and physiological stress that can challenge the immune system. First Line Immune Defense is formulated to provide support for immune system function and antioxidant activity.[1-5] Although sometimes recommended for daily use, this formula is also effective when employed at the first sign of immune challenge.*

**Whole Glucan Particle (WGP)**, purified from *Saccharomyces cerevisiae*, is the same high-quality 1,3/1,6 beta-glucan found in ImmunoSupport 250. This form is considered to be the most effective[2,6-8] because it provides immune support without the impurities that can interfere with uptake and effectiveness.[3,6,9] Mannan, a potential trigger for cytokine-modulating reactions, has been removed.*

Research indicates that orally administered yeast beta-glucan is processed by macrophages,[4,6,10,11] with subsequent increases in phagocytosis, selective cytokine release, and oxidative degranulation.[12] Macrophages degrade beta-glucan into small fragments that are then bound to neutrophils (granulocytes). This action primes the neutrophils and enhances their ability to eradicate microbial challenges.[6,9,13] Prophylactic administration of beta-glucan promotes production of antioxidant enzymes and assists in ameliorating microbial imbalance.[5] Sustained release of beta-glucan fragments into bone marrow may affect white blood cell recovery, a unique mechanism of action exhibited by the beta-glucan found in First Line Immune Defense.*[14]

A randomized, double-blind, placebo-controlled trial was conducted during the peak of seasonal immune challenge. Subjects receiving 250 mg of WGP had a significant reduction in the number of days in which signs of immune distress were experienced.[15] A 12-week, randomized, phase II, double-blind, placebo-controlled trial of 1,3/1,6 beta-glucan from *S cerevisiae* confirmed that long-term use was well tolerated and supported immune system function.*[3]

**Olive Leaf Extract**, from the traditional medicinal plant *Olea europaea*, has been shown to possess an array of healthful attributes, including antioxidant properties and effective immune support against opportunistic microbes. Olive leaf's multifaceted effects on the immune system include the ability to stimulate phagocytosis (an immune response against harmful microbes) and neutralize production of reverse transcriptase and protease enzymes that can adversely alter the ribonucleic acid (RNA) of healthy cells.*[16-18]

Oleuropein, a bitter glycoside that was isolated from olive leaf in the late 19th century,[19] was found to be further hydrolyzed in the body to elenolic acid, which is believed to be its most active component. Research reveals that both olive leaf extract and oleuropein exert positive immune effects, but olive leaf acts in a dose-dependent manner; that is, the greater the dose of olive leaf, the greater the inhibition of microbial replication.[17] First Line Immune Defense provides concentrated olive leaf extract that is standardized to 20% oleuropein, while less concentrated formulas are standardized to as little as 6% oleuropein.*

**Vitamin C (as ascorbic acid)** is a well-known antioxidant and plays an important role in immune support.[20] While most mammals are able to synthesize ascorbic acid, humans are unable to. They can quickly become depleted if intake is inadequate or requirements are increased due to exposure to stress, smoking, pollution, and temperature changes.*

Vitamin C supplementation has been studied for more than six decades with respect to moderating the severity or duration of acute immune challenges. Benefits are most notable in cases of extreme physical stress.[20] A Cochrane Review examined 65 years of placebo-controlled studies (55 studies) in which at least 200 mg of vitamin C was administered. Within three meta-analyses, in a subgroup of six studies, vitamin C reduced signs of acute immune challenge on an average of 50% in marathon runners, skiers, and soldiers that had been physically stressed or exposed to cold temperatures.*[21]

***These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**

First Line Immune Defense

# Supplement Facts

Serving Size: 3 Capsules
Servings Per Container: 15

| | Amount Per Serving | %Daily Value |
|---|---|---|
| Vitamin C (ascorbic acid) | 1,000 mg | 1,111% |
| Olive Extract (*Olea europaea*)(leaf)(20% oleuropein) | 1 g | ** |
| Baker's Yeast Beta-Glucan (69% gluco polysaccharide [beta 1,3/1,6])[S1] | 250 mg | ** |

** Daily Value not established.

**Other Ingredients:** Capsule (hypromellose and water), stearic acid, microcrystalline celluose, magnesium stearate, and silica.

S1. Wellmune® is a registered trademark of Kerry Group plc.

## Directions

For early and immediate support, take three capsules with water on an empty stomach, or use as directed by your healthcare professional.*

Consult your healthcare professional prior to use. Individuals taking medication should discuss potential interactions with their healthcare professional. Do not use if tamper seal is damaged.

## References


1. Kournikakis B, Mandeville R, Brousseau P, et al. Anthrax-protective effects of yeast beta 1,3 glucans. *Med Gen Med*. 2003 Mar 21;5(1):1. [PMID:12827062]
2. Vetvicka V, Terayama K, Mandeville R, et al. Pilot study: orally-administered yeast ß1,3-glucan prophylactically protects against anthrax infection and cancer in mice. *JANA*. 2002;5(2):5-9. Reprint. http://www.ana-jana.org/Journal/journals/JANAVol52.pdf. Accessed June 6, 2012.
3. Feldman S, Schwartz HI, Kalman DS, et al. Randomized phase II clinical trials of Wellmune WGP® for immune support during cold and flu season. *J Appl Res*. 2009 March-June;9(1&2):30-42. http://jrnlappliedresearch.com/articles/Vol9Iss1/FeldmanVol9No1.pdf. Accessed June 6, 2012.
4. Yan J, Allendorf DJ, Brandley B. Yeast whole glucan particle (WGP) beta-glucan in conjunction with antitumour monoclonal antibodies to treat cancer. *Expert Opin Biol Ther*. 2005 May;5 (5):691-702. [PMID: 15934844]
5. Senoglu N, Yuzbasioglu MF, Aral M, et al. Protective effects of N-acetylcysteine and beta-glucan pretreatment on oxidative stress in cecal ligation and puncture model of sepsis. *J Invest Surg*. 2008 Sep-Oct;21(5):237-43. [PMID: 19160131]
6. Driscoll M, Hansen R, Ding C, et al. Therapeutic potential of various beta-glucan sources in conjunction with anti-tumor monoclonal antibody in cancer therapy. *Cancer Biol Ther*. 2009 Feb;8(3):218-25. [PMID: 19106638]
7. Vetvicka V. Glucan-immunostimulant, adjuvant, potential drug. *World J Clin Oncol*. 2011 Feb 10;2(2):115-9. [PMID: 21603320]
8. Natural Standard Database. http://naturalstandard.com/databases/herbssupplements/betaglucan.asp. Accessed June 7, 2012.
9. Liang J, Melican D, Cafro L, et al. Enhanced clearance of a multiple antibiotic-resistant Staphylococcus aureus in rats treated with PGG-glucan is associated with increased leukocyte counts and increased neutrophil oxidative burst activity. *IntJ Immunopharmacol*. 1998 Nov;20(11):595-614. [PMID: 9848393]
10. Tian J, Ma J, Wang S, et al. Increased expression of mGITRL on D2SC/1 cells by particulate ß-glucan impairs the suppressive effect of CD4(+)CD25(+) regulatory T cells and enhances the effector T cell proliferation. *Cell Immunol*. 2011 May 10;270(2):183-7. [PMID: 21636079]
11. Qi C, Cai Y, Gunn L, et al. Differential pathways regulating innate and adaptive antitumor immune responses by particulate and soluble yeast-derived ß-glucans. *Blood*. 2011 Jun 23;117(25):6825-36. [PMID: 21531981]
12. Pelizon AC, Kaneno R, Soares AM, et al. Immunomodulatory activities associated with beta-glucan derived from Saccharomyces cerevisiae. *Physiol Res*. 2005;54(5):557-64. [PMID: 16238470]
13. Tsikitis V, Albina J, Reichner J. Beta-glucan affects leukocyte navigation in a complex chemotactic ingredient. *Surgery*. 2004 Aug;136(2):384-9. [PMID: 15300205]
14. Turnbull, JL, Patchen ML, Scadden DT. The polysaccharide, PGGglucan, enhances human myelopoiesis by direct action independent of and additive to early-acting cytokines. *Acta Haematol*. 1999;102(2):66-71. [PMID: 10529508]
15. Fuller R, Yam T, Butt H, et al. A randomised controlled trial to assess the ability of yeast-derived 1,3/1,6 glucopolysaccharide to reduce upper respiratory tract infection symptoms. In: Programme and Abstracts of the 1st UK International Functional Food Conference; Nov 25-26; 2010; Oxford, UK. http://www.shs.brookes.ac.uk/images/pdfs/research/functional-food/conference/conference-programme_v3_nov-2010.pdf. Accessed June 7, 2012.
16. Lee OH, Lee BY. Antioxidant and antimicrobial activities of individual and combined phenolics in Olea europaea leaf extract. *Bioresour Technol*. 2010 May; 101(10); 3751-4. [PMID: 20106659]
17. Micol V, Caturla N, Pérez-Fons L, et al. The olive leaf extract exhibits antiviral activity against viral haemorrhagic septicaemia rhabdovirus (VHSV). *Antiviral Res*. 2005 Jun;66(2-3): 129-36. [PMID: 15869811]
18. Markin D, Duek L, Berdicevsky I. In vitro antimicrobial activity of olive leaves. *Mycoses*. 2003 Apr;46(3-4):132-136. [PMID: 12870202]
19. Ritchason J. *Olive Leaf Extract*. Salt Lake City, UT: Woodland Publishing Incorporated; 2007.
20. Schlueter AK, Johnston CS. Vitamin C: Overview and Update. *J Evid-Based Comp & Alt Med (JEBCAM)*. 2011 Jan;16(1):49-57. http://chp.sagepub.com/content/16/1/49.full.pdf+html. Accessed June 4, 2012.
21. Douglas RM, Hemilä H, Chalker E, et al. Vitamin C for preventing and treating the common cold. *Cochrane Database Syst Rev*. 2007 Jul 18;(3):CD000980. [PMID: 17636648]


## Formulated To Exclude

Wheat, gluten, yeast protein, soy, animal and dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, and artificial preservatives.

***These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**


Distributed by: DermOne Health + Wellness
Franklin, Tennessee, 37064
Tomorrowsleaf.com
615-333-0662
Hello@BestCleanBeauty.com



DRS-235
REV. 09/02/22