

IMMUNITY

GenBioChem[®] Proclinic Immunity boosts a powerful immune defence.

NPN: 80094051



Standardized using GenBioChem[®] Triple Fingerprinting Technology™

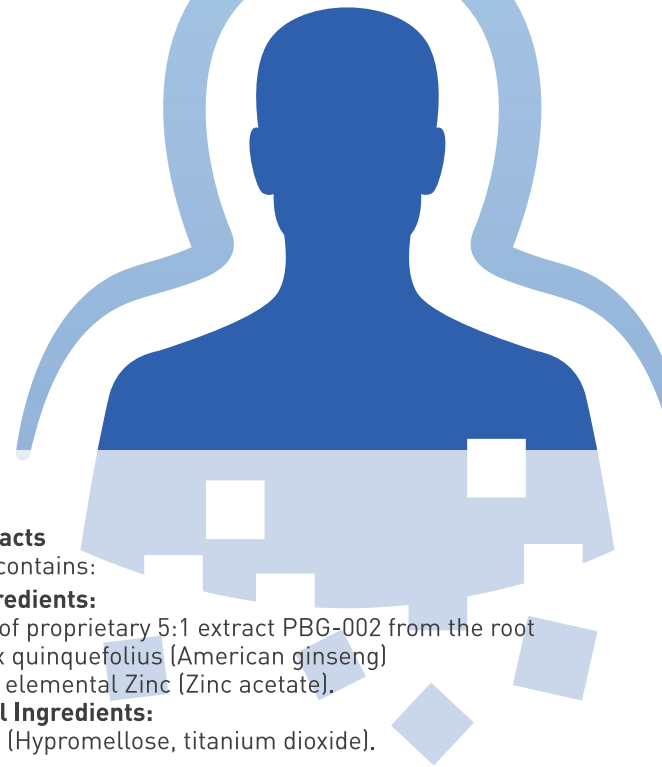
Our Unique Platform Technology

Our scientific and medical team have developed a breakthrough proprietary technology platform, GenBioChem[®] Triple Fingerprinting Technology™. Several cutting-edge analytic and biomedical technologies are involved in this technology platform.

Our GenBioChem[®] Triple Fingerprinting Technology™ ensures quality, authenticity and purity throughout our entire production cycle from lab to shelf.

Our Founder and Chief Scientist

Dr. Jacqueline Shan is an award-winning international scientist and business leader and the creator of the #1 selling cold and flu product in Canada, COLD-fX[®]. She leads a team of scientists and medical professionals in Canada and around the world to research and develop innovative biotechnologies and biomedical products.



Supplement Facts

Each capsule contains:

Medicinal Ingredients:

- 200 mg of proprietary 5:1 extract PBG-002 from the root of *Panax quinquefolius* (American ginseng)
- 0.35 mg elemental Zinc (Zinc acetate).

Non-Medicinal Ingredients:

- Capsule (Hydroxypropylmethylcellulose, titanium dioxide).

Effects:

Active ingredients have been shown to:

- Boost immune cells (natural killer cells, T-cells) response to viruses
- Help maintain a healthy immune system

Recommended Dose:

- Adults: Take 1-2 capsules 2-6 times per day. Take a few hours before or after taking other medications. Take with food.

Cautions and Warnings:

- Consult a health care professional prior to use if you have diabetes or are taking blood thinners or digoxin.
- Not recommended for those with known hypersensitivity and/or allergies to any of the ingredients.

Target Populations (ages 12 years and older):

- People with a weakened immune system due to poor health or age
- People susceptible to flu and other infections
- People recovering from a long-term and/or serious illness
- People who experience chronic physical and mental stress and lack of sleep
- People undergoing intensive exercise regimens or athletic training
- People who want to maintain a healthy immune system

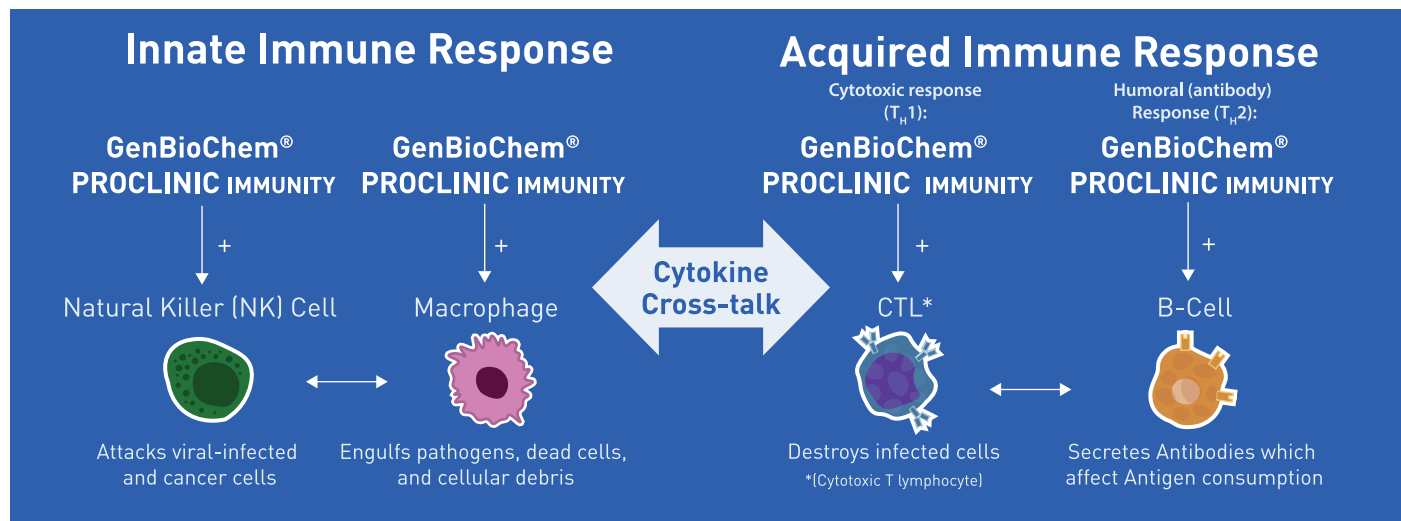
Our Company

GenBioChem[®] Proclinic Immunity is developed and manufactured by PBG BioPharma Inc. PBG BioPharma is a vertically integrated biopharmaceutical Canadian company. We are committed to becoming a world leader in research, development and manufacturing of evidence-based natural health products and therapeutics using our proprietary GenBioChem[®] Triple Fingerprinting Technology™.

GenBioChem® Proclinic Immunity enhances innate and acquired immune responses safely and effectively.

The immune system is a collection of structures, tissues, immune cells, antibodies, cytokines and physiological processes within the body. Immune function is the body's defense against infectious organisms (virus and bacteria), cancer cells and other invaders. Through a series of steps called the immune response, the immune system attacks organisms and substances that invade body systems and cause illness.

PBG-002 is a proprietary formulation developed by our scientific team led by Dr. Jacqueline Shan. The active ingredient PBG-002 activates both the innate (rapid, non-specific) and adaptive (delayed responses with antigen specificity and immunological memory) immune response. An important aspect of its unique mechanism of action is its ability to enhance natural killer (NK) cells and TH1 (cell-mediated immunity), which is known to promote the immune response and is required for host defense against viral infection.

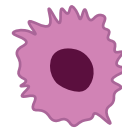
**NK Cell**

In the presence of a virus:

- Increases number of Natural Killer (NK) Cells
- Activates NK cells to secrete interferon- γ (IFN- γ)

B Cell

- Increases proliferation of B-lymphocytes
- Increases Antibody immunoglobulin (IgG) production
- Increase Lymphocyte release of Interleukin-2 (IL-2) and IFN- γ

Macrophage

- Increases proportion of Monocytes (Macrophage precursors) in the blood
- Increases Macrophage release of Cytokines: Interleukin-1 (IL-1) Interleukin-6 (IL-6), Tumor Necrosis Factor- α (TNF- α), and Nitric Oxide (NO).

References

- Ratan ZA, Youn SH, Kwak Y-S, et al (2021) Adaptogenic effects of Panax ginseng on modulation of immune functions. *Journal of Ginseng Research* 45:32-40
- Wang M, Guilbert LJ, Shan J et al. Immunomodulating activity of CVT-E002, a proprietary extract from North American ginseng (*Panax quinquefolium*), *JPP* 2000; 53:1515-1523.
- Zhou R, He D, Xie J, Zhou Q, Zeng H, Li H, Huang L (2021) The Synergistic Effects of Polysaccharides and Ginsenosides From American Ginseng (*Panax quinquefolius* L.) Ameliorating Cyclophosphamide-Induced Intestinal Immune Disorders and Gut Barrier Dysfunctions Based on Microbiome-Metabolomics Analysis. *Front Immunol*.
- Riaz, M., Rahman, N., Zia-ul-Haq, M., Jaffar, H.Z., & Manea, R. (2019). Ginseng: A dietary supplement as immune-modulator in various diseases. *Trends in Food Science and Technology*, 83, 12-30.
- Hasegawa, H., Suzuki, R., Nagaoka, T., Tezuka, Y., Kadota, S., & Saiki, I. (2002). Prevention of growth and metastasis of murine melanoma through enhanced natural-killer cytotoxicity by fatty acid-conjugate of protopanaxatriol. *Biological & pharmaceutical bulletin*, 25(7), 861-866.
- Biondo, P. D., Goruk, S., Ruth, M. R., O'Connell, E., & Field, C. J. (2008). Effect of CVT-E002 (COLD-FX) versus a ginsenoside extract on systemic and gut-associated immune function. *International immunopharmacology*, 8(8), 1134-1142.
- Ilarraza R, Wu Y, Davoine F, Ebeling C, Adamko DJ (2011) Human dendritic cells promote an antiviral immune response when stimulated by CVT-E002. *J Pharm Pharmacol* 63:670-678
- Miller SC, Ti L, Shan JJ. (2012). The sustained influence of short term exposure to a proprietary extract of North American ginseng on the hemopoietic cells of
- Miller, S.C., & Delorme, D. (2008). An Extract from North American Ginseng Stimulates Spontaneous Immunity in Infant Mice: Sustained, Augmented Immunity in Adulthood Long after Withdrawal of the Extract. *Journal of Complementary and Integrative Medicine*, 5.
- Miller, S.C., Delorme, D., & Shan, J. (2009). CVT-E002 stimulates the immune system and extends the life span of mice bearing a tumor of viral origin. *Journal of the Society for Integrative Oncology*, 7 4, 127-36.
- Miller, S.C., Delorme, D., & Shan, J. (2011). Extract of North American Ginseng (*Panax Quinquefolius*), Administered to Leukemic, Juvenile Mice Extends their Life Span. *Journal of Complementary and Integrative Medicine*, 8.
- Miller, S.C., Ti, L., & Shan, J. (2012). Dietary Supplementation with an Extract of North American Ginseng in Adult and Juvenile Mice Increases Natural Killer Cells. *Immunological Investigations*, 41, 157 - 170.
- Youn SH, Lee SM, Han C-K, In G, Park C-K, Hyun SH (2020) Immune Activity of Polysaccharide Fractions Isolated from Korean Red Ginseng. *Molecules*.
- McElhaney, J.E., Gravenstein, S., Cole, S. K., Davidson, E., O'Neill, D., Petjean, S., Rumble, B., Shan, J.J. (2004) A placebo controlled trial of a proprietary extract of North American ginseng (CVT-E002) to prevent acute respiratory illness in institutionalized older adults. *Am. J. Geriatric. Soc.* 52:13-19.
- Wessels I, Maywald M, Rink L. Zinc as a Gatekeeper of Immune Function. *Nutrients*. 2017 Nov 25;9(12):1286.
- Shankar AH, Prasad AS. Zinc and immune function: the biological basis of altered resistance to infection. *Am J Clin Nutr.* 1998 Aug;68(2 Suppl):447S-463S.
- Maggini, S., Maldonado, P., Cardim, P., Newball, C., & Latino, E.R. (2017). Vitamins C, D and Zinc: Synergistic Roles in Immune Function and Infections.