

## Study #2: Exercise Stress



**Study Protocol:**  
The randomized, double-blinded, placebo-controlled study involved 60 recreational athletes taking either a placebo or 250 mg of Wellmune WGP daily for 10 days.

The athletes then rode an exercise bicycle for one hour in the heat stress chamber. Blood samples were drawn at day 0 and immediately before and after the exercise session and again two hours post exercise.

Using a cross-over study design, the athletes next observed an eight-day "wash out" period before repeating the study with the other test variable (Wellmune or placebo).



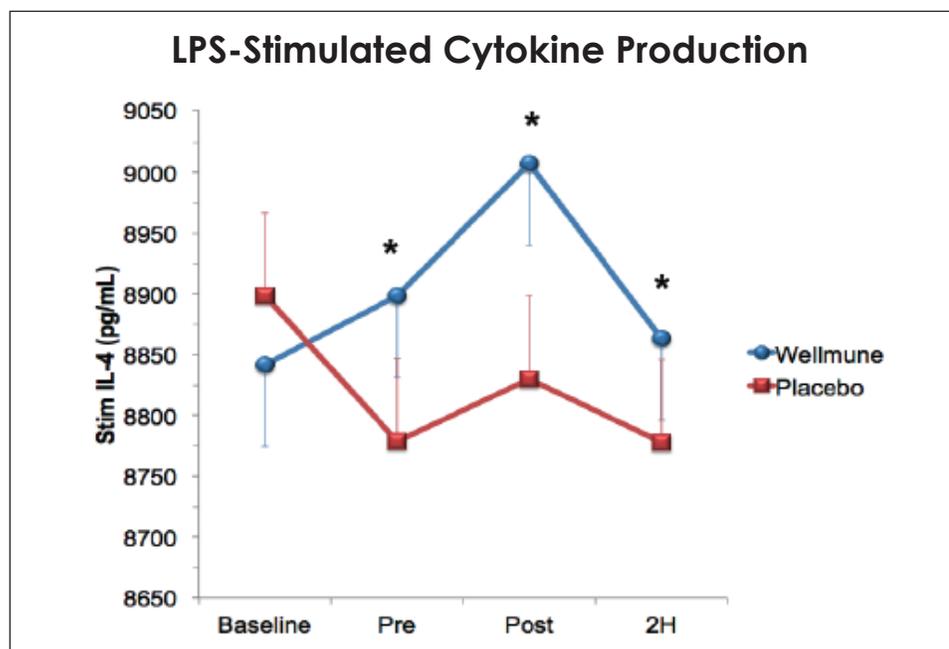
# Wellmune WGP Reduces Immune Suppression Associated with Strenuous Exercise

This clinical study conducted at the Department of Health and Human Performance at the University of Houston indicates that Wellmune WGP® may enable both recreational and elite athletes to exercise longer and harder with less risk of immune system suppression that normally follows high-intensity exercise.

The effectiveness of the immune system drops sharply below its normal state two to six hours after strenuous exercise and then gradually recovers within 24 hours. "During this 'open window' period, the athlete is more susceptible to infection, which may result in lost training time as well as missed work or school," said Brian McFarlin, Ph.D., FACSM, Associate Professor of Exercise Physiology, Nutrition, and Immunology.

Study participants also had higher levels of key cytokines (IL-2, IL-4, IL-5 and IFN gamma) following Lipopolysaccharide (LPS) stimulation when taking Wellmune WGP. LPS is derived from gram-negative bacteria and used to mimic a foreign challenge to stimulate an immune response.

"The effect of Wellmune WGP on LPS-stimulated IL-4 and IL-5 production suggests that leukocytes were primed for higher plasma cytokines that directly mediate innate and humoral-dependent immune responses," said Dr. McFarlin. "Our lab has tested numerous compounds but Wellmune is the first to prevent alterations in monocytes and key cytokines following high-intensity exercise."



(\*) Indicates statistically significant difference ( $P < 0.05$ ) between Wellmune WGP and placebo.

"Baker's Yeast  $\beta$ -glucan Supplementation Increases Monocytes and Cytokines Post-Exercise: Implications for Infection Risk?" (2012) *British Journal of Nutrition*. May 10:1-9.