

# SUMMARY of MAITAKEGOLD 404<sup>®</sup> RESEARCH

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## PUBLISHED STUDIES

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### 1 2009 Memorial Sloan-Kettering MaitakeGold 404<sup>®</sup> Human Clinical Trial

Deng G et al. 2009. A phase I/II trial of a polysaccharide extract from *Grifola frondosa* (Maitake mushroom) in breast cancer patients: Immunological effects. *J. Cancer Res. Clin. Oncol.* 135:1215-1221.

Design	# of Subjects	Duration	Dose
Randomized, double-blind, Phase I/II parallel study	34 subjects	3 weeks	Varying from 0.1 mg/kg-5 mg/kg twice daily

**Methods:** Researchers evaluated changes in cytokine levels to measure immune function

**Results:**

- Consumption of the 0.1 mg/kg twice daily dose (equivalent to the recommended dose of 7.5 mg twice daily for a 150 kg person) resulted in:
  - Increased levels of immune enhancing cytokines including IL-2 and IFN- $\gamma$
  - Greater amounts of anti-inflammatory cytokines including IL-10
  - Enhanced cytokine-producing T cell activity
- Well tolerated with no adverse effects or toxicity

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### 2 2005 University of Louisville MaitakeGold 404<sup>®</sup> Study

Vetvicka V and Vetvickova J. 2005. Immunostimulating properties of two different  $\beta$ -glucans isolated from Maitake mushrooms (*Grifola frondosa*). *JANA* 8(3):33-39.

Design	Duration	Dose
<i>In vivo</i> mouse study of MaitakeGold 404 <sup>®</sup> vs. Lentinan and Control	14 days oral feeding	100 $\mu$ g/day (equivalent to a human dose of 24.4 mg/day)

**Methods:** Researchers conducted a series of tests evaluating various aspects of immune function

**Results:**

- Increased phagocytic activity by 58%
- Greater number of phagocytic macrophage cells and CD4+ Helper T cells
- Enhanced natural killer cell activity
- Higher levels of several cytokines that activate macrophages (including IL-1, IL-2, and TNF- $\alpha$ ). IL-2, in particular, was nearly 60 times higher than the control.
- Outperformed Lentinan, an immune-enhancing, Shiitake-derived pharmaceutical

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### 3 2011 University of Louisville Stress-Related Immune Function Study

Vetvicka V and Vetvickova J. 2011. Immune enhancing effects of WB365 (sold under the tradename WellBody 365™), a novel combination of Ashwagandha (*Withania somnifera*) and Maitake (*Grifola frondosa*) extracts. North Am J Med Sci 3(7):320-324.

Design	Duration	Dose
<i>In vivo</i> mouse study of a MaitakeGold 404®/Sensoril® proprietary blend vs. Control	14 days oral feeding	1,086.5 µg/day (equivalent to the recommended human daily dose of the blend)

**Methods:** Researchers evaluated immune response in stress and non-stressed animals

**Results:**

- Stress reduced immune function and increased corticosterone levels in control mice
- Blend lowered corticosterone levels in stressed animals
- Blend enhanced immune function in stressed and non-stressed animals
- Blend increased phagocytosis as well as IL-6, IL-12, and IFN-γ cytokines

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### 4 2014 University of Louisville MaitakeGold 404® Shiitake Study

Vetvicka V and Vetvickova J. 2014. Immune-enhancing effects of Maitake (*Grifola frondosa*) and Shiitake (*Lentinula edodes*) extracts. Ann Transl Med 2(2):14-19.

Design	Duration	Dose
<i>In vivo</i> mouse study of a MaitakeGold 404®/Shiitake proprietary blend vs. Control	14 days oral feeding	881.5 µg/day (equivalent to the recommended human daily dose of the blend)

**Methods:** Researchers evaluated immune function based on phagocytosis, Natural Killer Cell activity, and cytokine levels

**Results:**

- Increased levels of phagocytosis in monocyte and neutrophil immune cells
- Enhanced Natural Killer (NK) Cell activity
- Greater levels of IL-6, IL-12, and IFN-γ cytokines
- Outperformed other immunomodulating ingredients tested including one of the leading alpha-glucan based proprietary nutraceuticals sold in North America

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### 5 Additional Published Studies

For customers developing products that support a higher level of immune modulation, additional published studies exist and may be requested by contacting a TradeWorks Group Sales Executive.