



\$5.4 MILLION STUDY SHOWS TURKEY TAIL MUSHROOMS STRENGTHEN IMMUNE SYSTEMS



Turkey tail, named for its colorful stripes, was the humble mushroom at center stage of the \$5.4 million collaboration between Bastyr Integrative Oncology Research Center, the University of Washington, the Seattle Cancer

Care Alliance and others, funded by the National Institutes of Health (NIH). The mushroom grows widely in forests around the world, but its health potential has never been fully measured in scientific trials.

Turkey tail's traditional use means derivatives are probably not patentable, which has dissuaded pharmaceutical companies from funding clinical trials. It's a research dilemma that NIH seeks to address through its [National Center for Complementary and Alternative Medicine \(NCCAM\)](#). NCCAM has helped fund research, such as the Bastyr/UW collaboration, that integrates traditional naturopathic medicine with modern empirical standards.

In addition, the U.S. Food and Drug Administration (FDA) approved a clinical trial for a turkey tail extract, for patients with mutagenic prostate tissues and breast tissues, allowing it to be taken in combination with conventional therapies to observe if it strengthened the subjects' immune systems. The breast trial will have lasted seven years for continuous follow up.

Persons undergoing standard therapies for breast or prostate mutated tissue cells, tend to have very low levels and activity of natural killer (NK) cells and other immune cells, which protect the body from tumors and viruses. NK cell counts and activity typically plummet after chemotherapy, leaving the body vulnerable to new diseases. The natural killer cells believed to be promoted by ingesting turkey tails are being studied for results.

WESTERN RESEARCH MERGES WITH ANCIENT EASTERN IMMUNE THERAPY

"We didn't discover turkey tail," says lead investigator Leanna J. Standish, PhD, ND, LAc, FABNO, medical director of the Bastyr Integrative Oncology Research Center. "It's been used in Asia for thousands and thousands of years, and it turns out to be a really potent immune therapy. Natural products have multiple mechanisms of action, and it is very difficult scientifically to figure out all those mechanisms. But our bodies have evolved to rely on them."

"Bringing clarity to time-tested but little-understood medicines requires combining traditional wisdom and modern science," says Hailing Lu, MD, PhD, research assistant professor of oncology at UW. "That's the point of the turkey tail study. We're excited about this," Dr. Lu said recently. "Japan and many other Asian countries have been using this [mushroom extract] for a long time. For me, it's a great combination. I come from China, so the use of herbal products is not new for me. This is a bridging of Eastern and Western medicine."

Coriolus versicolor (雲芝 yún zhī; Polyporaceae) has a long history of medicinal use in China and Japan and is one of the most researched and respected of the medicinal mushrooms from Europe to the Far East. Yun zhi in Chinese and kawaritake in Japanese mean “cloud mushrooms,” invoking an image of looking towards the sky and seeing swirling clouds overhead. In many Asian cultures, turkey tails’ billowing cloud forms symbolize longevity and health, spiritual attunement and infinity.

Turkey tail mushrooms contain large quantities of β -glucans that stimulate the immune system. The most active medicinal components are protein-bound β -glucan polysaccharides (PSKs, also known as Krestin in Japan) and polysaccharide-peptides (PSPs, yún zhī in China). Several clinical assays have reported that PSKs exhibit activity with strong and synergistic effects in combined therapies. Other studies have found antiviral activity. PSKs also induce potent antimicrobial activity against *Escherichia coli*, *Listeria monocytogenes*, and *Candida* (Sakagami et al., 1991). PSPs have been more recently developed in China as immunomodulatory agents and also found to exhibit anti-oxidant properties, with strong scavenging effects on superoxide and hydroxyl radicals.



MUSHROOMS MAY HELP WITH NEUROLOGICAL DISORDERS AND VIRUSES

Mushrooms have long been used not only as food but also for the treatment of various ailments. Although at its infancy, accumulated evidence suggested that culinary-medicinal mushrooms may play an important role in supporting the prevention of many age-associated neurological dysfunctions.

A review of over 20 different brain-improving culinary-medicinal mushrooms and at least 80 different bioactive secondary metabolites isolated from them were studied. The mushrooms or isolated compounds reduced beta amyloid-induced neurotoxicity (found in Alzheimer’s) and had positive functions supporting the firing of nerve and brain signals, nerve stimulation, nerve growth factor (NGF) synthesis, nerve protection, antioxidant and anti-inflammatory effects in nerve cells. More clinical studies are needed to observe if these extracts support neurological function in humans.

The natural killer cells promoted by ingesting turkey tails also target virally-infected cells. Moreover, turkey tail mushrooms have strong antiviral compounds, specifically active against Human papillomavirus (HPV), which causes cervical tissue abnormalities, and hepatitis C virus (HEP-C), which affects the liver. Viruses that induce mutations in tissues are called “oncoviruses.” The virus-to-cancer connection is where medicinal mushrooms offer unique opportunities for medical research. The current thinking amongst many researchers is that turkey tails and other medicinal mushrooms may help by reducing causal co-factors such as oncoviruses.

Although more research is needed, much tradition and science has been accomplished to definitely support adding quality mushrooms to your daily diet. One of the easiest ways is to take IMMUNE+++.

IMMUNE+++ FORTIFIED WITH TURKEY TAIL MUSHROOMS

IMMUNE+++ contains a synergistic, balanced blend of the finest quality mushrooms. When combined with the Life-C blend of highly bioavailable vitamin C—which is two times more potent and stays in circulation twice as long as other vitamin C forms—this formula clearly has superior benefits. Additionally, IMMUNE+++ has a synchronistic blend of natural antioxidants and bioflavonoids from Camu Camu, Acerola and Pomegranate fruit, Ashwagandha, and Sea Buckthorn. Take one to two tablets daily or more depending on your own health needs and guidelines. This formula was exclusively designed to optimize your health and immunity.



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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.

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