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Black seed's immune-health benefits get scientific validation

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New studies demonstrate that black seed is a potent immune-health ingredient with multifaceted benefits.



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medicine. While it's relatively new to the west, the numerous health applications of this little seed have been chronicled in Avicenna's *The Canon of Medicine*, published in 1025 A.D., as well as in Ayurvedic texts. David Foreman, RPh, president of Herbal Pharmacist Media (Oceanside, CA) and a consultant for black seed ingredients supplier TriNutra (Harrison, NY), says black seed oil has been extensively researched for its effects on several dimensions of health.

"Black seed oil provides multifaceted benefits with regards to immune health and function," Foreman says. "With its multiple nutritional and phytochemical compounds, black seed oil becomes one of the better ingredients to balance and support both innate and acquired immune function. The research is pretty extensive, primarily in the areas of cardiovascular health, inflammation, and metabolic health."

Researchers are increasingly investigating black seed's potential immune-health benefits. One November 2020 preprint multicenter placebo-controlled randomized clinical trial, which has not yet been peer reviewed, investigated whether a combination of honey and black seed could reduce symptom severity and shorten time-to-recovery in COVID-19 patients.¹

As clinical trials progress, some researchers are even looking at black seed as a potential source ingredient for new pharmaceutical drugs.² So, how does black seed enact these effects? New research is illuminating the various immune pathways involved.

Black Seed Acts on Cytokines to Regulate Inflammation

One particularly effective immune pathway through which black seed works is the inflammatory response. Morris Zelkha, CEO of TriNutra, says black seed oil in particular has various immunomodulatory properties.

"Black seed oil works by inhibiting excessive nitric oxide production and



responses.

One recent animal study³ examined the effects of TriNutra's branded ThymoQuin—a cold-pressed, full-spectrum black seed oil standardized to 3% thymoquinone and less than 2% free fatty acid—in combination with a high-potency omega-3 oil on inflammation and oxidative stress in obese mice. The mice were divided into five groups based on their diet regimen: A lean group (n = 5), a high-fat diet group (n = 5), a high-fat diet group supplemented with thymoquinone (n = 5), a high-fat diet group supplemented with omega-3s (n = 5), and a high-fat diet group supplemented with both thymoquinone and omega-3s (n = 5). After 23 weeks, the mice were sacrificed and examined.

The study found that while a high-fat diet contributed to an increase in secretions of inflammatory adipocytokines, a combination of thymoquinone and omega-3s significantly attenuated this effect. ThymoQuin administration was also associated with potentiated induction of heme oxygenase-1 (HO-1), an enzyme with anti-inflammatory properties.

Black seed oil has decades of research behind it, with the majority of the body of research focusing on its immune health and metabolic health benefits, Zelkha says. He notes that black seed oil's effects on the immune system cannot be disentangled from its metabolic health properties, as metabolic changes can influence the immune system.

“Black seed oil, as an antioxidant, improves the activity of antioxidant enzymes catalase and glutathione,” Zelkha notes. “This helps balance the inflammatory processes that activate and stimulate vital immune cells.”

TriNutra is currently engaged in research to explore ThymoQuin's immune-health applications when the ingredient is included in synergistic blends. Zelkha says the company has promising preliminary data from a new study on a blend combining ThymoQuin with vitamin D. That study will be

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Cytokine inhibition is only one of the ways in which black seed boosts the immune system. Shaheen Majeed, president worldwide of Sabinsa (East Windsor, NJ), says black seed extract can also inhibit reactive oxygen species and protect against oxidative stress. Sabinsa supplies its Nigellin brand of black seed extract.

“An increase in reactive oxygen species is typically associated with an increase in the production of cytokines,” Majeed says. “Black seed extract helps redox balance by restoring heme oxygenase-1 (HO-1) levels. HO-1 is a potent anti-inflammatory agent. By reversing the inhibition of HO-1, immune cells such as monocytes and macrophages will be able to better function in their roles for innate and adaptive immunity.”

Majeed notes that black seed extract is also known to aid phagocytosis, the cellular process through which some immune cells consume and destroy invading pathogens. The bioactive compound in black seed extract, thymoquinone, inhibits the production of inflammatory cytokines like TNF-alpha and interleukin-6, he says.

Clinical Trials Validate Black Seed's Benefits

Black seed extract's anti-inflammatory and anti-allergy potential is well supported in clinical trials and *in vitro* studies, Majeed says. One 2007 randomized, placebo-controlled trial⁴ examined the effects of a boiled black seed extract in a group of patients with moderate-to-severe asthma, evaluating resulting symptom score, disease severity, frequency of symptoms, and pulmonary function. While asthma is commonly conceived of as a respiratory disorder, it is widely acknowledged to have an immune component. Some researchers in fact contend that asthma is better classified as an immune disorder than a respiratory disorder.^{5,6}

All subjects in the study took an inhaled corticosteroid controller medication (400 to 1400 micrograms per day) and an inhaled beta-



medications such as beta agonists, corticosteroids, or theophylline.

In addition to their standard asthma medication, the subjects in the experimental group also received 15 ml/kg of a 0.1% black seed extract per day for three months. The subjects in the control group received a glucose/saline placebo. Participants were medically examined and took supervised spirometry and asthma symptom tests at baseline, after 45 days, and on study conclusion. After three months, the experimental group saw statistically significant decreases in night wheezing and coughing, exercise-induced wheezing and coughing, morning wheezing and coughing, chest wheezing, asthma severity, and both daily and weekly wheezing and coughing. In the control group, chest wheezing and asthma severity decreased on the second visit but returned to baseline on the third visit. The experimental group also reported a decrease in the use of beta-agonists, corticosteroids, and theophylline, while the control group did not. The study authors concluded that *Nigella sativa* may have a prophylactic effect in asthmatics and that further research is warranted.

COVID-19 to Boost Interest in Black Seed?

The global immune-health supplement market is expected to reach a USD \$43.5 billion valuation by 2031, having received a significant boost in interest during the COVID-19 pandemic.⁷ Black seed is building sound support as an immune-health ingredient in clinical research. Both in animal studies and human clinical trials, it has exerted multiple positive effects on the immune system, from inhibiting inflammation to promoting phagocytosis. With a robust body of research behind it, black seed is well positioned to gain a growing profile in the immune-health market.

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