

[IMAGE]

Quercetin: A Rising Star

By Lexi Loch, ND

Quercetin has grown exponentially in popularity throughout the past decade. According to the National Institutes of Health website, PubMed.gov, there was a 243 percent increase in quercetin publications from 2011 to 2021. More than 2,300 papers were published on quercetin in 2021 alone, bringing the total number of publications to over 13,000.

Numerous clinical trials are currently underway exploring quercetin's effects on conditions such as chronic obstructive pulmonary disorder (COPD), gastroesophageal reflux disease (GERD), COVID-19, cerebral blood flow, chronic hepatitis C, type 2 diabetes, sarcoidosis, lichen planus, and cancer prevention and treatment.¹

Clearly, there is growing interest and ever-expanding research data to substantiate quercetin's beneficial role in numerous health conditions. This research interest has translated into patient awareness as well. There was a 74.1 percent increase in quercetin supplement sales from 2019 to 2020, giving quercetin second place for percentage sales increase in natural channels.²

A Primer on Quercetin

Found in more than 20 plant species, quercetin is classified as a flavonoid, which belongs to a larger class of molecules called polyphenols. As the name implies, polyphenols have multiple phenol rings, which provide immense stability in the face of free radicals that can lead to oxidative stress.

As a secondary metabolite, quercetin is a plant pigment that helps to attract insects, provides protection against environmental stressors like infections, and aids in maintaining proper cell growth. Sound familiar? Protecting against infection and cell cycle regulation are properties that have been explored in humans as well.

Food sources of quercetin include onions, apples, berries, grapes, cherries, citrus fruits, honey, green leafy vegetables, herbs, spices, tea, and cocoa.³⁻⁴ It's no surprise that many of the quercetin-containing foods are often associated with promoting longevity and immune support.

Antihistamine Effects

Quercetin is probably best known for its role as an antihistamine, which is great news for anyone with allergies, asthma, upper-respiratory disorders, and type 1 hypersensitivity reactions (think anaphylaxis). According to the American College of Allergy, Asthma, and Immunology, over 50 million Americans suffer from some form of allergies each year, which places allergies at #6 on the list of leading causes of chronic illness.⁵

Histamine is a key molecule in the inflammatory response. Produced primarily by mast cells and basophils, histamine helps direct other immune cells (monocytes, T cells, macrophages, neutrophils, etc.) to the target site where inflammation or allergens have been detected. Excess histamine is highly indicated in the development of allergic diseases such as atopic dermatitis, allergic asthma and rhinitis.⁶

Flavonoids like quercetin have been shown in published studies to inhibit the release of histamine from basophils and mast cells. Research shows quercetin can act as a membrane stabilizer for mast cells to prevent their degranulation, reduce eosinophil inflammation, and relax muscles in the airways. This can translate to a reduction in pruritus, inflammation, bronchoconstriction and other uncomfortable symptoms of allergies.^{4,7}

Quercetin also helps to rebalance the immune response from a type 1 T helper (Th1) dominant type, commonly associated with atopic conditions and promoted by histamine, to a more balanced relationship between Th1 and Th2 cytokines, shifting the body toward immune tolerance.^{4, 8-9} With the ability to influence many pathways involved in allergic conditions, quercetin can be a safe and effective choice.¹⁰

Conventional allergy treatments, like antihistamines, are hypothesized to work by competitively blocking the histamine receptors, but can come with many side effects, including sedation and increased risk of dementia due to their anticholinergic effects.¹¹

Antiviral and Immune-Supportive Properties

In addition to its antihistamine properties, quercetin has been included in many practitioners' toolkits for its antiviral and immune-supportive properties. And rightfully so, as quercetin can stop viruses from binding and entering cells, inhibit key viral enzymes, and prevent viral replication. Quercetin's antiviral effects have been studied against herpes simplex virus (HSV), human immunodeficiency virus (HIV), influenza A virus, and most recently, SARS-CoV-2.¹²

In a randomized, double-blind, placebo-controlled trial, participants were given either 500 or 1,000 mg per day of quercetin for 12 weeks and rates of upper respiratory tract infection (URTI) were analyzed. Those in the 1,000 mg group, over the age of 40, experienced a 36 percent reduction in URTI severity and 31 percent reduction in URTI sick days.¹³

Similarly, quercetin can also halt bacterial and fungal replication, so it may fill an important gap in treatment, given the overprescription of antibiotics and the resulting question of their efficacy.

Ensuring Therapeutic Bioavailability

But while quercetin is a potent tool for many health applications, its absorption can be variable, with bioavailability ranging anywhere from zero to 50 percent. Therefore, to maintain therapeutic levels of quercetin, strategies to improve quercetin's bioavailability must be implemented. One such mechanism is through the usage of a plant-based oligosaccharide called gamma cyclodextrin.¹⁴

Through the formation of a ring structure, compounds that are generally difficult to absorb, like quercetin, are held in the ring's center and carried into the body. The gamma cyclodextrin ring is rapidly digested by salivary and pancreatic enzymes, thus delivering quercetin to the bloodstream. Additionally, gamma cyclodextrin helps shield quercetin from light and oxidation.

Quercetin is effective on its own, but is frequently combined with other vitamins, minerals and plant compounds. Researchers in Italy suggested early in the COVID-19 pandemic that quercetin and vitamin C could provide synergistic benefits for both prevention and treatment.¹⁵

Vitamin C is able to recycle quercetin and therefore, is very likely to enhance its immune-supportive properties, in addition to its other beneficial actions.¹⁶

A common botanical source of quercetin is from the Japanese pagoda tree (*Sophora japonica*), but with the compound's rising popularity, synthetic sources are emerging as well. Availability and research will no doubt determine which form is most popular with practitioners and their patients.

Overall, additional human studies will be invaluable to understanding the full therapeutic potential of quercetin. As of now, quercetin appears to be a safe and effective tool for many health conditions.

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