

APPLICATIONS

- Immune Health
- Zinc and Vitamin C Absorption
- Healthy Inflammatory Response Support
- Healthy Cardiovascular Support
- Antioxidant Support



INTRODUCTION

Quercetin is a yellow polyphenol bioflavonoid.^{*1} Of the six flavonoid subgroups, quercetin is classified as a flavonol.² NutraMedix Quercetin is in the form of quercetin dihydrate, which is chemically known as 2-(3,4-dihydroxyphenyl)-3,5,7-trihydroxy-4H-chromen-4-one dihydrate (IUPAC) with a molecular formula of $C_{15}H_{14}O_9$.^{3,4,5} It is also called pentahydroxyflavone dihydrate.

Quercetin is available in several forms.⁶ While flavonoid forms such as quercetin dihydrate are insoluble in water, they are highly available under physiological conditions in the presence of biological salts, especially to phagocytic and dendritic cells.^{*} Quercetin dihydrate has the greatest bioavailability in comparison to the glycoside, aglycone, and rutinoside forms.^{*7}

Quercetin bioavailability is determined by absorption, metabolism, and elimination, the last two of which are fairly rapid.³ The gut microbiome and individual genetics are also factors. Dietary fat and/or fiber may help to increase absorption, so it is recommended to take quercetin with meals or snacks.^{6,8} Daily consumption is recommended for optimal support as the half-life is between 11 and 28 hours.³

Quercetin can be found in many plants, including foods such as yellow and red onions, kale, apples, berries, grapes, citrus, red wine, and tea.^{3,9} It can also be found in botanicals such as elderberry, St. John's wort, milk thistle, green tea, ginkgo, and pagoda tree.¹⁰ NutraMedix Quercetin is purified from the flowers of *Sophora japonica*, commonly known as the pagoda tree. *S. japonica* buds (*huai mi*) and flowers (*huai hua*) have been used in traditional Chinese health practices for centuries to clear heat.^{*11}

NutraMedix rigorously follows current good manufacturing practices (cGMP), as do our suppliers. Our Quercetin is free of gluten, sugar, soy, and dairy. It is also free of GMOs, mold, and yeast.

IMMUNE HEALTH

Quercetin may help to maintain the Th1/Th2 ratio already within the normal range.^{*12} It may also support healthy basophil and mast cell stability, consequently maintaining Ca^{2+} influx, histamine, leukotrienes and prostaglandins already within the normal range.^{*12,13,14} Rat studies have shown that the greatest amount of absorbed quercetin can be found in the lung tissue,¹⁵ which may help to support a healthy seasonal immune response.^{*}

Quercetin may help to maintain levels of cytokines such as IL-1-alpha, IL-6, IL-8, and TNF-alpha already within the normal range.^{*3,14} It may also help maintain leukotrienes and PGD2 already within the normal range,¹⁴ serum IgE and eosinophil levels already within the normal range,¹² and NF-kappaB and MAPK already within the normal range.^{*13,16,17}

Additionally, Quercetin may help to maintain healthy dendritic cell function already within the normal range, supporting the connection between innate and adaptive immunity.^{*17} It may also help to maintain upper respiratory health ($p=0.020$; $p=0.004$).^{*18,19}

ZINC AND VITAMIN C ABSORPTION

Quercetin and other dietary polyphenols act as zinc ionophores, supporting zinc's entrance into cells independently of zinc transporters.^{*20} In studies with mouse cells, quercetin coadministered with zinc showed more effective intracellular zinc support than zinc administered alone.^{*20}

Quercetin and vitamin C have a synergistic relationship; bioflavonoids such as quercetin may help to increase the absorption of vitamin C, and vitamin C may help to recycle oxidized quercetin.^{*21,22,23}

OTHER USES

Healthy Inflammatory Response Support

Quercetin may help with healthy inflammatory response through supporting normal function of the lipoxygenase (LOX) and cyclooxygenase (COX) pathways, helping to maintain arachidonic acid metabolism already within the normal range.^{*1,3} Quercetin may help to maintain levels of TNF-alpha already within the normal range,³ PDE4 already within the normal range,¹² and IL-4, IL-5, and IL-13 already within the normal range.^{*13}

Healthy Cardiovascular Support

Quercetin may help to support cardiovascular health.^{*} It may help to maintain blood pressure already within the normal range ($p=0.049$),²⁴ help to maintain fasting plasma insulin ($p<0.03$) and insulin sensitivity ($p<0.04$) already within the normal range,²⁵ and help to maintain nitric oxide (NO) and plasma endothelin-1 already within the normal range ($p<0.05$).^{*26}

Antioxidant Support

Quercetin may help to support healthy oxidative balance by maintaining levels of glutathione (GSH) already within the healthy range.^{*27}

SAFETY AND CAUTIONS

Quercetin is generally well tolerated and has been safely used in amounts up to one gram daily for up to 12 weeks.^{28,29} Side effects may include headache and tingling of the extremities.³⁰ Quercetin may have additive effects with hypoglycemic and antihypertensive medications.^{31,32,33} It may increase the levels and adverse effects of cyclosporine,³⁴ diclofenac,³⁵ losartan,³⁶ pravastatin,³⁷ and quetiapine.³⁸ It may also increase the levels and adverse effects of CYP2C8, CYP2C9, CYP2D6, and CYP3A4 substrates; OAT1 and OAT3 substrates; OATP substrates; and P-glycoprotein substrates.³⁰ Additionally, quercetin may decrease the levels and effectiveness of midazolam and of quinolone antibiotics.^{39,29} Quercetin should be avoided in pregnancy and breastfeeding.

Safety not documented in breastfeeding or pregnant women, or in children under 3 years of age due to insufficient safety research.

*** This statement has not been evaluated by the Food and Drug Administration. This product is not intended to treat, cure, or prevent any diseases.**




KEEP OUT OF REACH OF CHILDREN
STORAGE: Keep tightly closed in a dry place at room temperature (59-86°F or 15-30°C)
SUGGESTED USE: Take two capsules once daily after a meal or as directed by your physician. Do not use if pregnant or nursing. Stop use if adverse reactions develop.

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QUERCETIN

SUPPORTS IMMUNE HEALTH AND ZINC & VITAMIN C ABSORPTION †

Dietary Supplement
120 Vegetable Capsules

Supplement Facts
 Serving Size 2 Capsules
 Servings Per Container 60

	Amount Per Serving	% DV
Quercetin (Sophora japonica) (Flower)	500 mg	100%

*Daily Value not established.
 Other Ingredients: Vegetable Capsule, Vegetable Magnesium Stearate

GLUTEN, SUGAR & DAIRY FREE

NutraMedix
 Jupiter, Florida 33458 USA
 www.nutramedix.com
 561-745-2917

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