

# Quercetin

SUPPORTS CARDIOMETABOLIC, CELLULAR AND IMMUNE HEALTH<sup>‡</sup>

Quercetin is a flavonoid widely present in fruits, vegetables, tea and wine, with onions and apples representing major food sources. Flavonoids are a class of polyphenols that occur widely in plants and act on a wide range of cellular signaling pathways. **Quercetin is one of the most bioactive flavonoids with multifaceted, beneficial effects on metabolic homeostasis, vascular function, aging and immune health.**<sup>1-3‡</sup>



Supports immune health<sup>‡</sup>



Promotes  
cardiometabolic health<sup>‡</sup>



A senolytic agent<sup>‡</sup>

## WHO IS THIS SUPPLEMENT FOR?

- Patients with immune sensitivity
- Patients who want to support their metabolic health
- Patients wishing to be proactive about healthy aging

## MECHANISMS OF ACTION

**Antioxidant activity.** Quercetin directly scavenges reactive oxygen species. In vitro, quercetin is one of the most bioactive antioxidants in the flavonoid family.<sup>4</sup>

**Immune modulating activity.** In vitro, quercetin stabilizes mast cells and modulates the release of immune mediators, including histamine.<sup>5</sup> In cultured mast cells, quercetin also suppressed IgE-mediated induction of cytokines, such as tumor necrosis factor-alpha (TNF-alpha), interleukin (IL)-1beta and IL-6.<sup>6</sup> In a mouse model, quercetin attenuated nasal sensitivity to an environmental trigger by improving the balance of Th1/Th2 and Treg/Th17 cells.<sup>7</sup>

**Effects on aging.** Quercetin is being investigated as a senolytic agent.<sup>8</sup> Senolytics are compounds that support healthy aging by selectively targeting senescent cells. Senescence is a process by which a cell ages and stops dividing but does not die when it should. Senescent cells release cytokines that disrupt homeostasis of other cells. The progressive accumulation of senescent cells contributes to normal age-associated decline in various physiological processes.<sup>9</sup>

**Metabolism and energy balance.** Quercetin activates AMPK and SIRT1 in preclinical models.<sup>10</sup> Quercetin was also found to increase activity of AMPK in a clinical study.<sup>11</sup> The AMPK/SIRT1 pathway supports mitochondrial biogenesis, autophagy and healthy aging.<sup>12</sup>





## RESEARCH HIGHLIGHTS\*

### Immunology

- In a clinical trial of 50 women, 500 mg of quercetin per day for 8 weeks significantly reduced circulating levels of TNF $\alpha$ , compared to placebo ( $p < 0.05$ ).<sup>13</sup>

### Metabolic Health

- In a randomized, placebo-controlled trial of 84 women, 1,000 mg of oral quercetin supplementation per day for 12 weeks significantly increased adiponectin receptor expression by 1.32-1.46-fold. Quercetin supplementation also elevated AMPK levels by 12.3% compared with the control group.<sup>11</sup>
- Supplementation with 1,000 mg of quercetin per day for 12 weeks improved adiponectin-mediated insulin sensitivity.<sup>14</sup>

### Cardiovascular Health

- Two meta-analyses (10 clinical trials involving 841 participants and 7 trials involving 587 participants) concluded that quercetin supplementation helped to maintain healthy blood pressure already within the normal range.<sup>15,16</sup>
- An analysis of 17 clinical trials ( $n = 896$  participants total) also indicated that quercetin significantly supported vascular function. Supplementation for at least 8 weeks also resulted in favorable changes in lipid profile.<sup>17</sup>

## REFERENCES

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## POTENTIAL INTERACTIONS

**Drug interactions.** Quercetin may interact with cyclosporine, diclofenac, midazolam, pravastatin and quetiapine.

To check whether a medication may have clinically significant interactions with [nutrients and] ingredients based on doses commonly used in dietary supplements, visit our

[Drug-Nutrient Interaction Checker](#).

**Interactions with other supplements.** Preliminary data suggest that quercetin may increase the bioavailability of green tea polyphenols (catechins) by inhibiting their methylation by COMT (catechol O-methyltransferase), a major route of phase II metabolic clearance.<sup>18</sup> Theoretically, this may increase the effects and/or adverse effects of green tea.

## RELEVANT GENETIC POLYMORPHISMS

In a cell culture model, quercetin decreased the activity and expression of COMT (catechol O-methyltransferase) which was confirmed in a mouse model.<sup>18</sup> It remains unclear whether quercetin inhibits or modifies COMT-catalyzed dopamine metabolism, or neurocognitive phenotypes associated with COMT polymorphisms.

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## Supplement Facts

2 capsules, 1-2 times daily, between meals.

Two (size 0) vegetarian capsules contain:

Quercetin	500 mg
Other ingredients: hypoallergenic plant fiber (cellulose), vegetarian capsule (cellulose, water)	

Immune Support



Quercetin	Quantity	Order Code
	120	QU1
	60	QU6

0.866 in



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