

Resveratrol Can Help Repair Skin Damage

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✓ Fact Checked

STORY AT-A-GLANCE

- › Evidence shows topical resveratrol can speed wound healing, improve scarring and reduce photoaging; scientists have now begun to identify the specific mechanisms through which this positive effect on wound healing occurs
- › Resveratrol is found naturally in the skin of grapes, blue and purple berries and dark chocolate. It crosses the blood-brain barrier, which may help regulate neurological inflammation and reduce the development of neurodegenerative diseases
- › The compound helps slow the cognitive decline in those with Alzheimer's, improves brain circulation to reduce the potential of vascular dementia and helps stabilize blood sugar, another factor in the development of dementia
- › Resveratrol supports your immune system, including reducing the effect of mitochondrial damage and boosting natural killer cells. Although made from grapes, wine does not deliver enough to get the benefits and negatively affects brain aging and DNA damage

An animal study¹ published in July 2021 demonstrated one mechanism through which resveratrol positively affected skin wound healing. This is significant since chronic wounds are a considerable health challenge and affect more people, with a far greater financial health burden, than has been appreciated in the past.

One study² published in 2018 aimed to determine the cost of chronic wound care for individuals who receive Medicare benefits. They used a retrospective analysis of the

data to estimate that Medicare spends from \$28.1 billion to \$96.8 billion on wound care, including infection costs, in just one year.

The most expensive appeared to be surgical wounds, followed closely by diabetic foot ulcers. The researchers concluded that expenditures for wound care were “far greater than previously recognized.”³ The data revealed there were approximately 8.2 million people who “had at least one type of wound or infection.”

One paper⁴ published in 2019 evaluated the results of 28 studies and found analyses aligned with past research, identifying the vast majority of wounds as chronic leg ulcers, a common complication of **Type 2 diabetes**. Some of the identified factors that affect wound healing include hydration, blood circulation, obesity, smoking, nutrition and diabetes.^{5,6}

As discussed below, resveratrol addresses several of the factors that have a negative impact on wound healing and may potentially reduce the number of chronic wounds and positively impact wound closure. Data from the most recent study⁷ are encouraging.

Resveratrol May Promote Wound Healing

Researchers have been investigating skin healing properties of resveratrol for years. The focus of study has moved from demonstrating that resveratrol has a positive impact on wound healing to trying to identify the specific mechanisms through which the positive effects occur.

Resveratrol has demonstrated the ability to increase granulation and wound healing in animal studies,⁸ and has demonstrated improvement in cutaneous healing, scarring and photoaging in a review of 41 studies.⁹

In 2020, a lab study¹⁰ demonstrated that resveratrol increased mesenchymal stem cell secretion of growth factors that improved impaired wound healing in a dose-dependent manner. In the same year, authors of another paper proposed that after reviewing the benefits of resveratrol on the skin, they believed the:¹¹

“Evidence suggests that topical resveratrol could be a valuable alternative not only for daily skin care, but also for the prevention and treatment of various cutaneous disorders.”

Topical administration of resveratrol in mice with Type 2 diabetes improved chemical responses that correlated with higher blood vessel density, which suggested that resveratrol could promote endothelial cell proliferation in those with diabetes.¹²

The 2021 study¹³ published in Laboratory Investigation, sought to analyze one pathway that resveratrol uses to regulate **skin repair**. They used both a lab model and an animal wound healing model, through which they evaluated cell viability and apoptosis. The aim was to measure the correlation between microRNA-212 (miR-212) and caspase 8 (CASP8).

CASP8 are cysteine protein cases that are involved in apoptosis and cytokine processing.¹⁴ miR-212 are single strand, noncoding RNA molecules that play a role in regulating gene expression.¹⁵

The researchers measured the wound area to determine the effectiveness of resveratrol on healing. They also found that it promoted cell proliferation and migration by increasing miR-212. When used to treat miR-212 knockdown mice, the wound healing was reduced. The researchers found this suggested that resveratrol:¹⁶

“... facilitates cell proliferation and migration in LPS-treated HaCaT cells and promotes skin wound-healing in a mouse model by regulating the miR-212/CASP8 axis.”

Neuroprotective Effects Support Brain Health

The compound resveratrol is found naturally in the skin of grapes, blue and purple berries and dark chocolate.¹⁷ Evidence suggests it can cross the blood-brain barrier.¹⁸ This is a natural barrier your body uses to protect the brain from substances that may have a toxic effect on the central nervous system.

Since resveratrol can cross the blood-brain barrier it may help regulate brain inflammation, which is a significant factor in the development of many **neurodegenerative diseases**.¹⁹ According to a report from Georgetown University Medical Center,²⁰ giving resveratrol to individuals with Alzheimer's helps restore the blood-brain barrier integrity and reduces the ability of harmful immune molecules to infiltrate the brain tissue.

By slowing the inflammation of the brain cells, it slowed the cognitive decline of individuals, as compared to a matched group of placebo-treated patients with Alzheimer's. Another animal study involving resveratrol had interesting effects, including increased aerobic activity and running time, protection against diet-induced obesity and insulin resistance, regulated metabolic function and stable health.²¹

Improvements in aerobic activity and reduction in insulin resistance and obesity are also neuroprotective. Resveratrol was found to suppress inflammatory effects in certain brain cells by inhibiting different proinflammatory cytokines and key signaling molecules.²² Later, another group of scientists confirmed the anti-inflammatory properties have neuroprotective effects.²³

There's also solid data that it helps to clear out the plaque in your brain that leads to Alzheimer's disease. One study published in the Journal of Biological Chemistry found resveratrol to exert "potent anti-amyloidogenic activity."²⁴

A Chinese animal study²⁵ also found that resveratrol can lower the risk for vascular dementia, the second most common form of dementia after Alzheimer's.²⁶ Unlike Alzheimer's, vascular dementia results from impaired blood flow. One study²⁷ in 2010 found the single dose may improve blood flow to the brain, following scientists' findings in 2017:²⁸

"... resveratrol suppresses vascular smooth muscle cell proliferation, promotes autophagy, and has been investigated in the context of vascular senescence.

Pre-clinical models unambiguously demonstrated numerous vasculoprotective effects of resveratrol. In clinical trials, resveratrol moderately diminished

systolic blood pressure in hypertensive patients, as well as blood glucose in patients with diabetes mellitus."

Other studies²⁹ showed it also **activates autophagy** and inhibits neuronal apoptosis, working to improve cognitive function.³⁰ A human study in 2020 showed that:³¹

"... regular consumption of resveratrol can enhance cognitive and cerebrovascular functions in postmenopausal women, with the potential to slow cognitive decline due to ageing and menopause."

Resveratrol Improves Bone Density, Blood Sugar and Immunity

Evidence suggests resveratrol has many other **health benefits**. Studies have demonstrated it has anti-inflammatory, cardioprotective, antioxidant, antiaging and chemoprotective properties.³² Additional blood flow to the brain has demonstrated it can improve learning,³³ mood and memory.³⁴

One 2019 study³⁵ published in the journal *Nutrients* also finds it helps prevent chronic diseases or progression of chronic diseases through several immune pathways. The researchers wrote:³⁶

"... resveratrol regulates immunity by interfering with immune cell regulation, proinflammatory cytokines' synthesis, and gene expression ... it targets sirtuin, adenosine monophosphate kinase, nuclear factor- κ B, inflammatory cytokines, antioxidant enzymes along with ... gluconeogenesis, lipid metabolism, mitochondrial biogenesis, angiogenesis, and apoptosis.

Resveratrol can suppress the toll-like receptor (TLR) and pro-inflammatory genes' expression. The antioxidant activity of resveratrol and the ability to inhibit enzymes involved in the production of eicosanoids contribute to its anti-inflammation properties."

The immune-boosting potential has spawned an outgrowth of research into the possible effect it may have on cancers.³⁷ Researchers wrote some of the mechanisms resveratrol

uses that may alter the immune system include reducing the effects of mitochondrial damage, diminishing abnormal T-cell activation and boosting natural killer cells.³⁸

Resveratrol also has an effect on your bone density and quality of bone. In postmenopausal women, **osteoporosis** is a widespread and serious condition. As bones become more fragile and porous, they are at greater risk of fracture. Of all people over age 50, approximately 50% of women and 25% of men may suffer a fracture in the years to come.³⁹

One study⁴⁰ from the University of Newcastle in New South Wales found improvements in bone density in postmenopausal women who were given resveratrol. The participants took 75 milligrams (mg) twice daily or a placebo for 12 months. Bone density was measured with dual-energy X-ray absorptiometry scans, commonly called DEXA scans.

One author in the study said the modest increase at the femoral neck resulted in improvements and “a reduction in the 10-year probability of major fracture risk.”⁴¹ Doctors prescribe replacement hormones and bisphosphonates to treat osteoporosis but, as mentioned in a study in *Nutrients*,⁴² their side effects can be so dangerous that they may outweigh the benefits.

The compound has also been found to improve blood sugar in those with Type 2 diabetes.⁴³ After just eight weeks of supplementation, fasting blood sugar declined, high-density lipoproteins increased, and insulin levels improved.

The study was done on 71 overweight patients with Type 2 diabetes and a body mass index between 25 and 30. The participants received either 1,000 mg per day of trans-resveratrol or methylcellulose (placebo) for eight weeks. A second study with 56 participants who had Type 2 diabetes and coronary heart disease found similarly encouraging results. The researchers concluded:⁴⁴

“Resveratrol reduced fasting glucose, insulin and insulin resistance and significantly increased insulin sensitivity when compared with the placebo. Resveratrol also significantly increased HDL-cholesterol levels and significantly decreased the total-/HDL-cholesterol ratio when compared with the placebo.”

Seek a Healthy Source of Resveratrol

Resveratrol is a polyphenol designed to increase the lifespan of the plant by helping it resist disease and stressors related to changes in the climate, such as too much ultraviolet light. However, while grapes are a source of resveratrol, you'll not get the neuroprotective and antiaging benefits by drinking red wine.

Gregorio Valdez, Ph.D., is an assistant professor at Virginia Tech Carilion Research Institute. He explained that the resveratrol in wine is in such small amounts that you can't drink enough of it to get the benefits.⁴⁵ Additionally, as I've written before, alcohol has several significant negative effects on your health, including [sleep](#), [brain aging](#) and [damage to your DNA](#).

One way to access the [benefits of resveratrol](#) is by eating muscadine grapes, which contain the highest concentration among foods, especially in the skin. Mulberries and blueberries are other good sources.

Limit your intake to one-half cup per day, however, because fruit also contains [fructose](#). A whole food resveratrol supplement containing bits of muscadine grape skin is another option.

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