

# RESVENOX™

Resveratrol. Polyphenolic. Antioxidant.

*A Brief Look At What Is Resveratrol  
And What Are The Many Benefits?*



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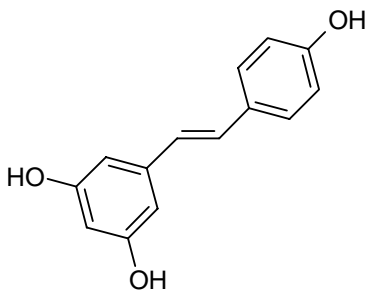
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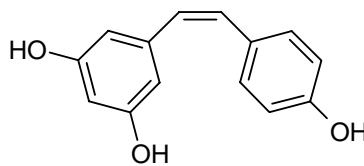
# Resveratrol

## Introduction

Resveratrol (3,4',5-trihydroxystilbene) is a stilbenoid, a derivative of stilbene, and is produced in plants. Stilbenes are polyphenolic compounds that exert chemopreventive effects<sup>38</sup>. RES exists as two geometrical isomers: cis-(Z) and trans- (E). Trans-resveratrol is the active form. The two geometrical isomers of resveratrol are given below:



Trans-Resveratrol



Cis-Resveratrol

It is now realized that resveratrol offers significant health benefits and offers anti-aging/longevity properties to those who consume it. This powerful compound found in certain foods (such as red wines, grapes, and peanuts) and dietary supplements offers numerous health benefits for the promotion of longevity and works with the sirtuin enzymes as well. The sirtuin enzyme set is genes that appear to be responsible for preserving the lives of cells. It has already been shown that RES extends the life of yeast, round worms, and mice. Furthermore, scientists now understand that the RES found in red wine is responsible for the people of southern France having low incidences of coronary heart disease despite a high intake of saturated fats; and this is known as the “French Paradox.”



## **Resveratrol Is A Phytoestrogen**

As we age, there is a natural decrease in estrogen and androgen levels that leads to poor functioning of tissues and organs, which can increase the chances of cancer. There is hope however, as hormone dependent tumors such as breast and prostate can be averted by daily consumption of selective estrogen receptor modulators (SERMs)<sup>39</sup>. Resveratrol is a polyphenol that acts as a phytoestrogen with positive effects on estrogen receptor-expressing and nonexpressing human tumors, and it can function as natural SERM<sup>39</sup>.

## **Cardiovascular Health Support**

Resveratrol possesses interesting cardio protective characteristics. It turns out that the antioxidant and anti-platelet activities of RES allow for it to function as a powerful heart protectorate<sup>12</sup>. One study reported that treating rat heart cells called fibroblasts with resveratrol prevented the actions of the hormone angiotensin II<sup>19</sup>.

RES has also been shown to exert powerful inhibitory activity against superoxide anion and hydrogen peroxide production<sup>4</sup>. Furthermore, RES has hydroxyl-radical scavenging properties and it has been found to have glutathione-sparing activity<sup>28</sup>. RES also offers anti-inflammatory properties. It was reported that RES was more effective, though less powerful than glucocorticoids<sup>30</sup>. Some of the applications of this study are that RES should be valuable in inflammatory diseases where glucocorticosteroids have proved to be unsuccessful, such as COPD, steroid-resistant asthma, and arthritis.

## **Immune Support**

Resveratrol interferes with all three stages of carcinogenesis – initiation, promotion and progression<sup>4</sup>. It was shown that resveratrol can protect rodents from mammary cancer (breast cancer)<sup>1</sup>. Resveratrol exerts antioxidant and anti-inflammatory effects, and can



potentially modulate cell death as well as cell cycle and estrogen receptor function in breast cancer cell lines<sup>2</sup>.

Research shows that the oedema-suppressing activity of resveratrol is better than indomethacin or phenylbutazone<sup>6</sup>. Other research shows that RES can prevent the growth of leukemia cells in culture<sup>8</sup>.

### **Sports Nutrition**

A study found that mice fed RES had bigger and denser mitochondria amassed between adjacent myofibrils in their nonoxidative fibers<sup>34</sup>. The max VO<sub>2</sub> rate was much higher in the nonoxidative muscle fibers of mice given RES, which means there was an increased oxidative capacity. Since RES has the possibility to change muscle fibers to a dominance of oxidative type 1 fibers, it should make sense that this would improve endurance due to the fact that these type of fibers have a higher resistance to muscle fatigue<sup>34</sup>. Mice given RES were shown to outrun the control group by almost twice the distance<sup>34</sup>.

### **Antiviral Effects**

RES has some interesting anti-influenza properties<sup>20</sup>. An *in vitro* study found that RES profoundly inhibited influenza virus replication in cell cultures<sup>20</sup>. In the mice group it was shown that RES given after influenza infection increased survival by 40% compared to placebo. RES has also been shown to exhibit activity against herpes simplex virus types I and II<sup>32</sup>. The RES disturbs a crucial early event in the viral reproduction cycle.

### **Brain Health**

RES has the special ability to modulate the mechanisms of neurological disease such as strokes, ischemia, Alzheimer's, and Huntington's disease<sup>14</sup>. It seems that this occurs through the SIRT1 protein. A study found that mice with ischemia in the brain had improved blood



flow from one dose of resveratrol<sup>17</sup>. The use of RES after brain injury has potential to reduce oxidative stress and lesion volume<sup>35</sup>.

## **Metabolic Health**

RES can also play a role in metabolic disease prevention. Metabolic diseases include epidemics such as obesity and diabetes. A study showed that when RES was given orally to mice it activated a protein in the Sirtuin family, which henceforth activated another protein for mitochondrial function<sup>15</sup>. Furthermore, the study proved that RES increases the association of the Sirt1 enzyme with energy expenditure, which therefore led to a reduction in weight gain.

Another study similar to the above had three groups of mice fed a high calorie diet, a normal diet, and one group was also given RES along with a high calorie diet. The results showed that when the high calorie fed mice reached old age (114 weeks), greater than 50% had died compared to less than 33% of the high calorie mice receiving resveratrol<sup>16</sup>. Results also showed that mice receiving RES had lower plasma levels of insulin, glucose and insulin-like growth factor (IGF) 1– all of which are markers for the onset of diabetes in humans if elevated.

Calorie restrictions have been shown to lengthen lifespan in numerous animals by activating the SIRT1 enzyme. RES is one such compound that can activate the SIRT1 and mimic the effects of calorie restriction<sup>16</sup>.

## **Skin Health**

Research has shown that RES applied topically can inhibit the expression of a cancer causing protein that is caused by UVB exposure (sun)<sup>21</sup>. Resveratrol also has the ability to inhibit *Propionibacterium acne* growth<sup>31</sup>. This acne prevention effect could be useful to people who would like to get rid of their acne without resorting to harsh drugs or chemicals.



Another quality of RES is that when applied topically in sufficient quantities, it has the ability to prevent the growth of fungal infections known as dermatophytes<sup>33</sup>.

RES has many possible applications in the cosmeceutical industry. Because it possesses certain antifungal properties, RES may have use in antifungal creams and ointments. Since it was also shown that RES provides protection against certain types of bacteria causing acne, it may have use in preparations used to rid one's body of acne. As mentioned, the fact that RES can offer protection from UVB related skin problems gives the applications for use in sunscreens, sunburn creams with aloe vera, and other beauty products.



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