Resveratrol improves insulin sensitivity, reduces oxidative stress and activates the Akt pathway in type 2 diabetic patients.


Source

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Abstract

Although resveratrol has widely been studied for its potential health benefits, little is known about its metabolic effects in humans. Our aims were to determine whether the polyphenol resveratrol improves insulin sensitivity in type 2 diabetic patients and to gain some insight into the mechanism of its action. After an initial general examination (including blood chemistry), nineteen patients enrolled in the 4-week-long double-blind study were randomly assigned into two groups: a resveratrol group receiving oral 2 × 5 mg resveratrol and a control group receiving placebo. Before and after the second and fourth weeks of the trial, insulin resistance/sensitivity, creatinine-normalised ortho-tyrosine level in urine samples (as a measure of oxidative stress), incretin levels and phosphorylated protein kinase B (pAkt):protein kinase B (Akt) ratio in platelets were assessed and statistically analysed. After the fourth week, resveratrol significantly decreased insulin resistance (homeostasis model of assessment for insulin resistance) and urinary ortho-tyrosine excretion, while it increased the pAkt:Akt ratio in platelets. On the other hand, it had no effect on parameters that relate to β-cell function (i.e. homeostasis model of assessment of β-cell function). The present study shows for the first time that resveratrol improves insulin sensitivity in humans, which might be due to a resveratrol-induced decrease in oxidative stress that leads to a more efficient insulin signalling via the Akt pathway.

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