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„Resveratrol modulates astroglial functions: neuroprotective hypothesis.“

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„Resveratrol moduliert die astroglialen Funktionen: neuroprotektive Hypothese.“

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„Η ρεσβερατρόλη ρυθμίζει τις λειτουργίες των αστροκυττάρων: νευροπροστατευτική υπόθεση.“

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Le resvératrol module les fonctions astrogliales : hypothèse neuroprotectrice.

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Resveratrol reguluje astroglální funkce: neuroprotektivní hypotéza.

[Ann N Y Acad Sci](#). 2011 Jan;1215:72-8. doi: 10.1111/j.1749-6632.2010.05857.x.

Resveratrol modulates astroglial functions: neuroprotective hypothesis.

[Quincozes-Santos A](#), [Gottfried C](#).

Source Department of Biochemistry, Institute of Health's Basic Science, Federal University of Rio Grande do Sul, Porto Alegre, Brazil.

Abstract

Resveratrol, a redox active compound present in grapes and wine, has a wide range of biological effects, including cardioprotective, chemopreventive, and anti-inflammatory activities. The central nervous system is a target of resveratrol, which can pass the blood-brain barrier and induce neuroprotective effects. Astrocytes are one of the most functionally diverse groups of cells in the nervous system, intimately associated with glutamatergic metabolism, transmission, synaptic plasticity, and neuroprotection. In this review, we focus on the resveratrol properties and response to oxidative insult on important astroglial parameters involved in brain plasticity, such as glutamate uptake, glutamine synthetase activity, glutathione content, and secretion of the trophic factor S100B.

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PMID: 21261643

GB

„Resveratrol inhibits isoprostane production in young and aged rat brain.“

DE

Resveratrol hemmt die Isoprostanproduktion in jungen und alten Rattenhirnen.

GR

Η ρεσβερατρόλη εμποδίζει την παραγωγή ισοπροστανίου στον εγκέφαλο νεαρών ή γηραιών ποντικών.

FR

Le resvératrol inhibe la production d'isoprostane dans le cerveau du rat jeune et âgé.

CZ

Resveratrol inhibuje vznik isoprostanu v mozku mladých a starých potkanů.

Resveratrol inhibits isoprostane production in young and aged rat brain.

[Chiavaroli A](#), [Brunetti L](#), [Orlando G](#), [Recinella L](#), [Ferrante C](#), [Leone S](#), [Di Michele P](#), [Di Nisio C](#), [Vacca M](#).

Source Department of Drug Sciences, G. d'Annunzio University, Chieti, Italy.

Abstract

Resveratrol (3,5,4-trihydroxystilbene), a viniferin polyphenolic compound, has been shown to have neuroprotective effects and we tested its possible antioxidant activity in young and aged rat brain, evaluating, in vitro, synaptosomal 8-isoprostaglandin F₂alpha (8-iso-PGF₂alpha) production as a marker of oxidative stress. We found that in young rat brain synaptosomes resveratrol perfusion had no effect on basal 8-iso-PGF₂alpha production, but quenched to basal levels the increased 8-iso-PGF₂alpha production induced by hydrogen peroxide. On the other hand, in aged rats, resveratrol was able to decrease 8-iso-PGF₂alpha production both basally and after hydrogen peroxide-induced oxidative stimulus. **In conclusion, our findings show that the antioxidant effects of resveratrol in rat brain could play a neuroprotective role in aging, when the increased burden of oxidative stress is faced by defective antioxidant mechanisms.**

PMID: 21122283

GB

„Anti-inflammatory effects of resveratrol: possible role in prevention of age-related cardiovascular disease.“

DE

Antiinflammatorische Wirkung von Resveratrol: mögliche Rolle bei der Prävention der altersbedingten kardiovaskulären Erkrankung.

GR

„Αντιφλεγμονώδης δράση της ρεσβερατρόλης: συμβολή στην πρόληψη καρδιαγγειακών παθήσεων που σχετίζονται με το γήρας.“

FR

Effets anti-inflammatoires du resvératrol : rôle possible dans la prévention de la maladie cardiovasculaire liée à l'âge.

CZ

Protizánětlivé účinky resveratrolu: možná úloha v prevenci kardiovaskulárních onemocnění spojených se stárnutím.

[Ann N Y Acad Sci.](#) 2011 Jan;1215:117-22. doi: 10.1111/j.1749-6632.2010.05848.x.

Anti-inflammatory effects of resveratrol: possible role in prevention of age-related cardiovascular disease.

[Csiszar A.](#)

Source

Reynolds Oklahoma Center on Aging, Department of Physiology, Oklahoma City, USA. anna-csiszar@ouhsc.edu

Abstract

Cardiovascular diseases are the most common cause of death among the elderly in the Western world. Resveratrol (3,5,4'-trihydroxystilbene) is a plant-derived polyphenol that was shown to exert diverse anti-aging activity mimicking some of the molecular and functional effects of caloric restriction. This **mini-review focuses on the molecular and cellular mechanisms activated by resveratrol in the vascular system, and explores the links between its anti-oxidative and anti-inflammatory effects, which could be exploited for the prevention or amelioration of vascular aging in the elderly.**

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PMID: 21261649

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„Resveratrol as an anti-inflammatory and anti-aging agent: mechanisms and clinical implications.“

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Resveratrol als antiinflammatorischer und Antiaging-Wirkstoff: Mechanismen und klinische Implikationen.

Ⓖ

„Η ρεσβερατόλη ως αντιφλεγμονώδης και αντιγηραντικός παράγοντας: μηχανισμοί και κλινική σημασία“

Ⓕ

Le resvératrol en tant qu'agent anti-inflammatoire et anti-âge : mécanismes et implications cliniques.

Ⓒ

Resveratrol jako protizánětlivá látka proti stárnutí: mechanismy a klinické implikace.

[Mol Nutr Food Res.](#) 2005 May;49(5):405-30.

Resveratrol as an anti-inflammatory and anti-aging agent: mechanisms and clinical implications.

[de la Lastra CA](#), [Villegas I](#).

Source Department of Pharmacology, Faculty of Pharmacy, University of Seville, Seville, Spain. calarcon@us.es

Abstract

Resveratrol is a phytoalexin polyphenolic compound found in various plants, including grapes, berries, and peanuts. Multiple lines of compelling evidence indicate its beneficial effects on neurological, hepatic, and cardiovascular systems. Also one of the most striking biological activities of resveratrol soundly investigated during the late years has been its cancer-chemopreventive potential. In fact, recently it has been demonstrated that this stilbene blocks the multistep process of carcinogenesis at various stages: tumor initiation, promotion, and progression. **One of the possible mechanisms for its biological activities involves downregulation of the inflammatory response through inhibition of synthesis and release of pro-inflammatory mediators, modification of eicosanoid synthesis, inhibition of activated immune cells, or inhibiting such as inducible nitric oxide synthase (iNOS) and cyclooxygenase-2 (COX-2) via its inhibitory effects on nuclear factor (kappa)B (NF-(kappa)B) or the activator protein-1 (AP-1).** **More recent data provide interesting insights into the effect of this compound on the lifespan of yeast and flies, implicating the potential of resveratrol as an anti-aging agent in treating age-related human diseases.** It is worthy to note that the phenolic compound possesses a low bioavailability and rapid clearance from the plasma. As the positive effects of resveratrol on inflammatory response regulation may comprise relevant clinical implications, the purpose of this article is to review its strong anti-inflammatory activity and the plausible mechanisms of these effects. Also, this review is intended to provide the reader an up-date of the bioavailability and pharmacokinetics of resveratrol and its impact on lifespan. PMID: 15832402

GB

„Vascular dysfunction in aging: potential effects of resveratrol, an anti-inflammatory phytoestrogen.“

DE

Vaskuläre Dysfunktion im Alter: potenzielle Wirkung von Resveratrol, einem antiinflammatorischen Phytoöstrogen.

GR

Αγγειακή δυσλειτουργία κατά τη γήρανση: πιθανή δράση της ρεσβερατρόλης, ενός αντιφλεγμονώδους φυτοοιστρογόνου.

FR

Dysfonctionnement vasculaire avec l'âge : effets potentiels du resvératrol, un phyto-oestrogène anti-inflammatoire.

CZ

Vaskulární dysfunkce při stárnutí: možné účinky resveratrolu, protizánětlivý fytoestrogen.

[Curr Med Chem.](#) 2006;13(9):989-96.

Vascular dysfunction in aging: potential effects of resveratrol, an anti-inflammatory phytoestrogen.

[Labinsky N](#), [Csiszar A](#), [Veress G](#), [Stef G](#), [Pacher P](#), [Oroszi G](#), [Wu J](#), [Ungvari Z](#).

Source Department of Physiology, New York Medical College, Valhalla, New York 10595, USA.

Abstract

Epidemiological studies demonstrated that even in the absence of other risk factors (e.g. diabetes, hypertension, hyperhomocysteinemia, hypercholesterolemia), advanced age itself significantly increases cardiovascular morbidity by enhancing vascular oxidative stress and inflammation. Because the population in the Western world is rapidly aging, there is a substantial need for pharmacological interventions that delay the functional decline of the cardiovascular system. Resveratrol is an atoxic phytoestrogen found in more than 70 plants including grapevine and berries. Recent data suggest that nutritional intake of resveratrol and other polyphenol compounds may contribute to the "French paradox", the unexpectedly low cardiovascular morbidity in the Mediterranean population. There is **increasing evidence that resveratrol exerts multifaceted anti-oxidant and/or anti-inflammatory effects in various disease models**. Importantly, **resveratrol was reported to slow aging and increase lifespan in simple organisms and has been suggested as a potential calorie restriction mimetic**. **Resveratrol has also been reported to activate NAD-dependent histone deacetylases (sirtuins), which may contribute to its anti-aging effects**. This review focuses on the role of oxidative stress and inflammation in cardiovascular dysfunction in aging, and on emerging anti-aging therapeutic strategies offered by resveratrol and other polyphenol compounds.

PMID:16611080

[Free PMC Article](#)

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„Protection against recurrent stroke with resveratrol: endothelial protection.“

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„Schutz vor wiederholtem Schlaganfall mit Resveratrol: endothelialer Schutz.“

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Προστασία ενάντια στο επαναλαμβανόμενο εγκεφαλικό επεισόδιο με ρεσβερατρόλη: προστασία του ενδοθηλίου

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Protection contre l'AVC récurrent avec le resvératrol : protection endothéliale.

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„Ochrana proti opakující se mozkové příhodě s resveratrolem: endotelová ochrana.“

Protection against recurrent stroke with resveratrol: endothelial protection.

[Clark D](#), [Tuor UI](#), [Thompson R](#), [Institoris A](#), [Kulynych A](#), [Zhang X](#), [Kinniburgh DW](#), [Bari F](#), [Busija DW](#), [Barber PA](#).

Source Department of Physiology, Clinical Neurosciences and Radiology, University of Calgary, Calgary, Canada.

Abstract

Despite increased risk of a recurrent stroke following a minor stroke, information is minimal regarding the interaction between injurious mild cerebral ischemic episodes and the possible treatments which might be effective. The aim of the current study was to investigate recurrent ischemic stroke and whether resveratrol, a nutritive polyphenol with promising cardio- and neuro- protective properties, could ameliorate the associated brain damage. Experiments in adult rats demonstrated that a mild ischemic stroke followed by a second mild cerebral ischemia exacerbated brain damage, and, daily oral resveratrol treatment after the first ischemic insult reduced ischemic cell death with the recurrent insult ($P < 0.002$). Further investigation demonstrated reduction of both inflammatory changes and markers of oxidative stress in resveratrol treated animals. The protection observed with resveratrol treatment could not be explained by systemic effects of resveratrol treatment including effects either on blood pressure or body temperature measured telemetrically. Investigation of resveratrol effects on the blood-brain barrier in vivo demonstrated that resveratrol treatment reduced blood-brain barrier disruption and edema following recurrent stroke without affecting regional cerebral blood flow. Investigation of the mechanism in primary cell culture studies demonstrated that resveratrol treatment significantly protected endothelial cells against an in vitro 'ischemia' resulting in improved viability against oxygen and glucose deprivation ($39.6 \pm 6.6\%$ and $81.3 \pm 9.5\%$ in vehicle and resveratrol treated cells, respectively). An inhibition of nitric oxide synthesis did not prevent the improved cell viability following oxygen glucose deprivation but SIRT-1 inhibition with sirtinol partially blocked the protection ($P < 0.001$) suggesting endothelial protection is to some extent SIRT-1 dependent. **Collectively, the results support**

that oral resveratrol treatment provides a low risk strategy to protect the brain from enhanced damage produced by recurrent stroke which is mediated in part by a protective effect of resveratrol on the endothelium of the cerebrovasculature.

PMID: 23082218

[Free PMC Article](#)

Ⓒ

„Resveratrol as a therapeutic agent for neurodegenerative diseases.“

Ⓓ

Resveratrol als therapeutischer Wirkstoff für neurodegenerative Erkrankungen.

Ⓖ

Η ρεσβερατρόλη ως θεραπευτικός παράγοντας στις νευροεκφυλιστικές νόσους.

Ⓕ

Le resvératrol en tant qu'agent thérapeutique de maladies neurodégénératives.

Ⓒ

Resveratrol jako terapeutická látka pro neurodegenerativní onemocnění.

[Mol Neurobiol.](#) 2010 Jun;41(2-3):375-83. doi: 10.1007/s12035-010-8111-y. Epub 2010 Mar 21.

Resveratrol as a therapeutic agent for neurodegenerative diseases.

[Sun AY](#), [Wang Q](#), [Simonyi A](#), [Sun GY](#).

Source Department of Medical Pharmacology and Physiology, University of Missouri, Columbia, MO 65212, USA. suna@health.missouri.edu

Abstract

Excess production of reactive oxygen species in the brain has been implicated as a common underlying risk factor for the pathogenesis of a number of neurodegenerative disorders, including Alzheimer's disease (AD), Parkinson's disease (PD), and stroke. In recent years, there is considerable interest concerning investigation of antioxidative and anti-inflammatory effects of phenolic compounds from different botanical sources. In this review, we first describe oxidative mechanisms associated with stroke, AD, and PD, and subsequently, we place emphasis on recent studies **implicating neuroprotective effects of resveratrol**, a polyphenolic compound derived from grapes and red wine. These studies show that the beneficial effects of resveratrol are not only limited to its antioxidant and anti-inflammatory action but also include activation of sirtuin 1 (SIRT1) and vitagenes, which can prevent the deleterious effects triggered by oxidative stress. In fact, SIRT1 activation by resveratrol is gaining importance in the development of innovative treatment strategies for stroke and other neurodegenerative disorders. The goal here is to provide a better understanding of the mode of action of resveratrol and its possible use as a potential therapeutic agent to ameliorate stroke damage as well as other age-related neurodegenerative disorders.

PMID: 20306310

[Free PMC Article](#)

GB

„The „French Paradox““ and beyond: neuroprotective effects of polyphenols.“

DE

„Das „französische Paradox“ und mehr: neuroprotektive Wirkung von Polyphenolen.“

GR

„Το «Γαλλικό Παράδοξο»: η νευροπροστατευτική δράση των πολυφαινόλων.“

FR

Le « paradoxe français » et au-delà : effets neuroprotecteurs des polyphénols.

CZ

Mimo francouzský paradox: neuroprotektivní účinky polyfenolů.

[Free Radic Biol Med.](#) 2002 Feb 15;32(4):314-8.

The "French Paradox" and beyond: neuroprotective effects of polyphenols.

[Sun AY](#), [Simonyi A](#), [Sun GY](#).

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Abstract

Chronic ethanol ingestion is known to cause oxidative damage to a number of organs including the brain. This is partly due to the ability of ethanol to enhance oxygen free radical production and lipid peroxidation. Increase in oxidative stress has been regarded as an important underlying factor for a number of human health problems including cardiovascular diseases, aging, as well as many age-related neurodegenerative diseases. The strikingly low incidences of coronary heart diseases (CHD) in France, despite intake of a high-fat diet, have been attributed to the consumption of red wine containing high levels of polyphenolic compounds. In recent years, understanding the "French Paradox" has stimulated new research interest to investigate whether polyphenolic antioxidants may offer protective effects beyond the cardiovascular system, and whether polyphenols from other botanical sources may similarly offer beneficial effects to human health. Our studies with animal models have provided information clearly indicating the ability of grape polyphenols to ameliorate neuronal damages due to chronic ethanol consumption. **Studies with resveratrol, an important component of grape polyphenols, also show protective effects on neuron cell death induced by ethanol and other oxidative agents.** These studies demonstrate an urgent need to extend research beyond the "French Paradox" towards better understanding molecular mechanisms of action of polyphenolic compounds and their application to human health.

PMID: 11841921