XVII KONGRES

MEDICINSKE BIOHEMIJE I LABORATORIJSKE MEDICINE

sa međunarodnim učešćem

XVII CONGRESS OF MEDICAL BIOCHEMISTRY AND LABORATORY MEDICINE

with international participations

&

6th EFCC SYMPOSIUM FOR BALKAN REGION

OKTOBAR 5–9, 2010

PLENARNO PREDAVANJE
OPENING LECTURE

UDK 577.1 : 61 **ISSN 1452-8258**

J Med Biochem 29: 353, 2010

Opening lecture
Plenarno predavanje

VINO I ZDRAVLJE: PARADIGMA ZA ALKOHOL I ANTIOKSIDANTE

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Mnoga epidemiološka istraživanja su pokazala da umereno konzumiranje alkohola produžava očekivani životni vek tako što smanjuje rizik od izvesnih bolesti. Pomenuti smanjeni rizik najvažniji je kod koronarne srčane bolesti i ishemijskog moždanog udara, koje izaziva aterosklerotska vaskularna bolest. Postoje tvrdnje da takvi efekti zavise od vrste pića, kao i da crno vino ima najmoćnije dejstvo. Ovaj pregled ispituje relativni doprinos etanola i polifenolskih antioksidanata iz crnog vina, razmatrajući njihov potencijal da inhibiraju aterogenezu i njene mehanizme. Postoji valjani dokazi, kako *in vitro* tako i *in vivo*, da etanol povećava produkciju i cirkulišuće nivoe HDL-holesterola i smanjuje formiranje ugrušaka tako što blokira aktivnost trombina i inhibiciju fibrinolize. Na taj način sprečava migraciju glatkih mišićnih ćelija u intimalni sloj arterija i snižava incidencu dijabetes melitusa tipa II, kao važnog faktora rizika za aterosklerotsku bolest. Crno vino pored etanola sadrži mnoge polifenolske antioksidante takođe prisutne u voću i povrću (npr. katehin i kvercetin), kao i rezveratrol koji se gotovo isključivo nalazi u grožđu i crnom vinu. U *in vitro* eksperimentima pokazano je da ti polifenoli, naročito rezveratrol, iskazuju moćna svojstva koja omogućavaju sprečavanje ateroskleroze. Pored toga što smanjuju formiranje ugrušaka, oni ublažavaju inflamatorne reakcije regulisanjem produkcije eikozanoida i citokina, sprečavaju oksidaciju LDL, smanjuju ekspresiju molekula ćelijske adhezije i povećavaju produkciju NO. Međutim, istraživanja na životinjama i ljudima dala su protivrečne rezultate. Taj paradoks mogu objasniti studije koje pokazuju da te polifenole, uzete oralno, mukoza tankog creva brzo konjuguje sa glukuronidom i sulfatom pre apsorpcije, posle čega bubrezi odmah izlučuju deaktivirane konjugate rastvorljive u vodi. Slobodna biološki aktivna izvorna jedinjenja pojavljuju se u cirkulaciji u veoma malim koncentracijama i sa vrlo kratkim poluživotom a njihovo preuzimanje od strane relevantnih tkiva nije se moglo potvrditi. Iz toga sledi da crna i bela vina imaju slične efekte kod ljudi koji se u osnovi mogu pripisati samom alkoholnom sadržaju. Ovi nalazi ukazuju da su antioksidansi u ishrani možda manje efikasni nego što se ranije verovalo.

WINE AND HEALTH: A PARADIGM FOR ALCOHOL AND ANTIOXIDANTS

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Moderate alcohol consumption has been shown in many epidemiological investigations to prolong overall life expectancy by reducing the risk of certain diseases. Those that account most for this reduction are coronary heart disease and ischemic stroke, both of which are caused by atherosclerotic vascular disease. It has been claimed that these effects are beverage-specific, with red wine being the most potent. This review examines the relative contributions of ethanol and the polyphenolic antioxidants of red wine by considering their potential to inhibit atherogenesis and the mechanisms involved. There is good evidence, both *in vitro* and *in vivo*, that ethanol increases production and circulating levels of HDL-Cholesterol, and reduces clot formation by blocking thrombin activity as well as by inhibition of fibrinolysis. It also prevents migration of smooth-muscle cells to the intimal layer of arteries and reduces the incidence of Type II Diabetes Mellitus, a major risk factor for atherosclerotic disease. Red wine, in addition to ethanol, contains many polyphenolic antioxidants that are also present in fruit and vegetables (such as catechin and quercetin), as well as resveratrol that is almost restricted to grapes and red wine. These polyphenols, especially the last-named, have been show by *in vitro* experiments to exhibit many potent properties conducive to preventing atherosclerosis. In addition to lowering clot formation, they diminish inflammatory reactions by down-regulating production of eicosanoids and cytokines, they prevent oxidation of LDL, reduce expression of cell-adhesion molecules, and increase NO production. However, investigations in whole animals and human subjects have yielded conflicting results.The above paradox can be explained by studies demonstrating that these polyphenols, when taken orally, are rapidly conjugated with glucuronide and sulfate by the small-intestinal mucosa prior to absorption, following which the deactivated water-soluble conjugates are quickly excreted by the kidney. The free biologically-active parent compounds appear in the circulation in very low concentrations and with a very rapid half-life. Uptake by relevant tissues could not be demonstrated. In line with this evidence, red and white wines have comparable effects when administered to humans that are essentially attributable to their alcohol content alone. These findings suggest that dietary antioxidants may be less effective than previously thought.