

# PROMENE POKAZATELJA OKSIDACIONOG STRESA I ELEMENATA ANTIOKSIDACIONE ZAŠTITE U AKUTNOM KORONARNOM SINDROMU

## CHANGES IN MARKERS OF OXIDATIVE STRESS AND ELEMENTS OF ANTIOXIDANT DEFENSE IN ACUTE CORONARY SYNDROME

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### SAŽETAK

Uvod: Oksidacioni stres, stanje neravnoteže između reaktivnih vrsta kiseonika i antioksidacione odbrane, igra značajnu ulogu u nastanku i razvoju akutnog koronarnog sindroma (AKS). Doprinosi nestabilnosti plaka, inflamaciji i disfunkciji endotela, što na kraju dovodi do ruptуре plaka i tromboze, obeležja AKS.

Cilj: Cilj ovog rada bio je da se ispituju promene u pokazateljima oksidacionog stresa- konjugovanih diena (CD), ukupnih hidroperoksida (TH), uznapredovalih oksidacionih produkata proteina (AOPP) i elemenata antioksidacione zaštite - koncentracije ukupnih tiola (TT), aktivnosti superoksid dismutaze (SOD) i glutation peroksidaze-3 usled akutne miokardne ishemiје u plazmi pacijenata sa ACS.

Materijal i metode: Određivane su aktivnosti SOD, GPox-3, i koncentracije CD, TH, AOPP i TT u plazmi kod 77 pacijenata sa AKS u i upoređene sa vrednostima kod 33 zdrava dobrovoljna davaoca krvi.

Rezultati: Koncentracija CD ( $p<0,0001$ ), TH ( $p<0,0001$ ) i AOPP ( $p<0,0001$ ) je značajno povećana u plazmi pacijenata sa AKS. Koncentracija TT je bila nepromenjena ( $p=0,8859$ ), aktivnost SOD je smanjena ( $p<0,0001$ ), i povećana aktivnost GPox-3 ( $p<0,0001$ ) u plazmi pacijenata sa AKS.

Zaključak: Intenzitet oksidacionog stresa u plazmi u akutnom koronarnom sindromu je visok i ispoljava se povećanom oksidacionom modifikacijom lipida i proteina. Nivo antioksidacione zaštite je nedovoljan da bi sprečio oksidacionu modifikaciju lipida i proteina u plazmi u akutnom koronarnom sindromu i predstavlja slab odgovor na povećani oksidacioni stres.

Ključne reči: oksidacioni stres, antioksidaciona zaštita, akutni koronarni sindrom

### ABSTRACT

Introduction: Oxidative stress, a condition of imbalance between reactive oxygen species and antioxidant defenses, plays a significant role in the development and progression of acute coronary syndrome (ACS). It contributes to plaque instability, inflammation, and endothelial dysfunction, ultimately leading to plaque rupture and thrombosis, the hallmarks of ACS.

Aim: The aim of this study was to research the changes in markers of oxidative stress- conjugated dienes (CD), total hydroperoxides (TH), advanced oxidation protein products (AOPP), and elements of antioxidant protection- concentration of total thiols (TT), activity of superoxide dismutase (SOD) and glutathione peroxidase-3 (GPox-3) in plasma during acute myocardial ischemia in patients with ACS.

Materials and methods: The activities of SOD, GPox-3, and the concentrations of CD, TH, AOPP and TT in plasma, were determined in 77 patients with ACS and compared with 33 healthy subjects.

Results: Concentration of CD ( $p<0.0001$ ), TH ( $p<0.0001$ ) and AOPP ( $p<0.0001$ ) were found significantly increased in plasma of patients with ACS. Concentration of TT was unchanged ( $p=0.8859$ ), SOD activity was decreased ( $p<0.0001$ ) and GPox-3 increased ( $p<0.0001$ ) in plasma of patients with ACS.

Conclusion: The intensity of oxidative stress in plasma in acute coronary syndrome is high and is manifested by increased oxidative modification of lipids and proteins. The level of antioxidant protection is insufficient to prevent oxidative modification of lipids and proteins in plasma in acute coronary syndrome and represents a weak response to increased oxidative stress.

Keywords: oxidative stress, antioxidant defense, acute coronary syndrome