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## The effect of resveratrol on glycation and oxidation products in plasma and liver of chronic methylglyoxal-treated rats

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### ABSTRACT

**Background:** Methylglyoxal (MG) is a highly reactive dicarbonyl compound. It is produced by processes like glycolysis, glucose autooxidation, lipid peroxidation, and protein glycation. It is a major precursor of advanced glycation end products (AGE). It also exacerbates oxidative stress in the organism. Although there are some *in vitro* studies investigating the effect of resveratrol (RES) as an antioxidant and antiglycating agent on MG-induced toxicity, *in vivo* effect of RES is unknown. Therefore, we aimed to investigate the efficiency of RES in chronic MG-treated rats.

**Methods:** Rats were given incrementally increased doses (100-300 mg/kg) of MG in drinking water for ten weeks. RES (10 mg/kg *ip*) was administered together with MG. Reactive oxygen species (ROS) formation, thiobarbituric reactive substances (TBARS), protein carbonyl (PC), advanced oxidation protein products (AOPP) and AGE levels as well as ferric reducing antioxidant power (FRAP) values were determined in plasma and liver.

**Results:** Significant increases in plasma TBARS, PC, AOPP and AGE and fructosamine levels were detected in MG-treated rats. However, plasma ROS and FRAP levels remained unchanged. Hepatic ROS, TBARS, PC and AOPP, but not AGE and FRAP levels were also increased in MG-treated rats. RES treatment diminished high levels of plasma PC, AOPP and AGE levels in MG-treated rats. Additionally, significant decreases in hepatic ROS, TBARS, PC and AOPP levels together with histopathological amelioration were detected due to RES treatment in MG-treated rats.

**Conclusions:** Our results indicate that RES may be considered as a protective agent against glycoxidative stress generated by *in vivo* MG treatment.

### Key Words

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