

P018 Age changes of mRNA content of superoxide dismutase, catalase and glutathione peroxidase in the liver of C57Bl/6 mice

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Superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPx) are known as the key genes of antioxidant system and impairment of their expression can play pivotal role in development of oxidative stress, ROS-associated pathology, and aging. Objective of this research was to estimate age-changes of mean values, variability, distribution patterns and correlative links between expression and activity of SOD, CAT and GPx.

Material and Methods. mRNA content (RT-PCR) and activity of SOD, CAT and GPx were determined in the liver of 62 young (3-5 months) and 58 old (23-26 months) male C57Bl/6 mice.

Results and Conclusions. Aging of mice was associated with declined mRNA content of CAT. Distribution analysis revealed declined proportion of individuals with a higher expression of SOD and CAT but not GPx in old mice compared with young animals. Positive correlation was found between SOD, CAT, and GPx mRNA levels in both age groups, assuming that coordinated expression of antioxidant genes could be essential for successful aging. Surprisingly, there were practically “zero” correlation between mRNA level and activity of SOD or CAT. In contrast, the expression and activity of GPx correlated negatively in young mice, whereas positive correlation was observed in old animals. Cluster analysis indicated the enzymatic pair catalase-GPx which is primarily responsible for H₂O₂ metabolism, as a key “target” of antioxidant modification in aging.