Journal of Andrology, Vol 13, Issue 5 450-455, Copyright © 1992 by The American Society of Andrology

JOURNAL ARTICLE

Antioxidant enzyme activity in the maturing rat testis

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Developmental profiles of the activity of the antioxidant enzymes superoxide dismutase (SOD), catalase, glutathione peroxidase (GSH-Px), glutathione transferase (GSH-Tr), and hexose monophosphate shunt (HMS) were measured in the rat testis and liver. The level of SOD in the testis was high at the age of 6 to 10 days, after which it dropped to approximately one third of that level by 20 days of age, and remained there up to 8 months of age. In the liver, SOD activity steadily increased from the neonatal to adult stage of life, reaching the same level as detected in the testis. The testicular activity of catalase was only 2% to 7% of that found in liver at all ages. It increased in both organs up to 6 weeks of age, whereafter the hepatic activity gradually decreased and no further changes were seen in the testis. The GSH-Px activity was low in the testis and declined slightly with age, whereas activity in the liver increased four-fold between birth and adulthood. The activity of GSH-Tr was similar in both organs studied: it increased after birth, showing a maximum in the liver at 1.5 months (ten-fold increase) and in the testis at 5 months of age (four-fold increase). The HMS activity was two to three times higher in the liver than in the testis, and decreased slightly with age in both organs. Thus, the basal levels and developmental profiles of antioxidant enzymes in the testis differ greatly from those in the liver.(ABSTRACT TRUNCATED AT 250 WORDS)

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