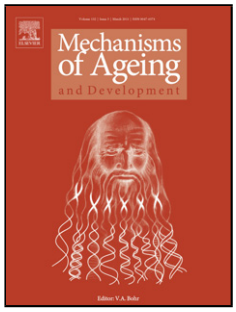

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Telomere length, sibling competition and development of antioxidant defense in wild house mice

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Highlights

- Antioxidants and telomeres reflect exposure and ability to cope with stressors.
- Wild mice were used in a longitudinal study with sibling competition as a stressor.
- Antioxidants increase after maturation and females have higher levels than males.
- Long telomeres at early age associate with better antioxidant defense at later life.
- Sibling competition has delayed negative effect on females' antioxidant defense.

Abstract

Antioxidants and telomere length are potential biomarkers for individuals' exposure and ability to cope with environmental stressors. However, intraspecific variations in antioxidant alterations due to natural, life cycle related stress, have been rarely estimated. We investigated those changes in wild-derived house mice in a longitudinal study with natural sibling competition as a stressor. Blood was used for telomere length measurements at 8-weeks age and for several selected antioxidants at 8-weeks and 6-months age. Our results show that most of the antioxidants increase during that time, indicating that antioxidant-system continues to develop after early development and sexual maturation. In addition females had higher antioxidant-levels than males. Mice with longer telomeres had also higher superoxide dismutase-activity and more glutathione than mice with shorter telomeres, meaning that long telomeres are associated with better antioxidant defense at maturation and during later life. Sibling competition at early age affected superoxide dismutase-levels at 6-months, but only in females. Females, which were lighter than the average of the litter had low superoxide