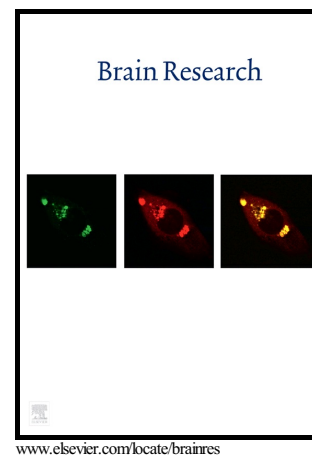


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Low maternal care is associated with increased oxidative stress in the brain of lactating rats

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ABSTRACT

Maternal care is crucial for offspring development and licking/grooming patterns can be induced by sensorial, neuroendocrine, and metabolic variations in the CNS. Important brain functions, such as learning and memory, can be influenced by oxidative stress, which can also modulate pathophysiological processes (e.g., depression, anxiety, and other psychiatric disorders). This study evaluated oxidative stress in the hippocampus (HP), olfactory bulb (OB), and plasma in Low-Licking (LL) and High-Licking (HL) lactating rats through superoxide dismutase (SOD) and catalase (CAT) activities, DNA damage (comet assay), and dihydrodichlorofluorescein (DCF) oxidation assay. Results demonstrate that in the HP of LL, the activities of SOD and CAT were increased compared to HL. In the OB, the activities of SOD and CAT were also increased in LL. The comet assay in the HP showed that LL had higher levels of basal damage and increased levels of DNA breaks than HL. In the OB, LL also had higher levels of DNA damage. In the plasma, no difference was observed in either SOD or CAT activities, but the DCF oxidation assay revealed that LL had higher levels of ROS production than HL. In conclusion, we observed that LL mothers showed evidence of increased oxidative stress when compared to HL, suggesting that variations in maternal behavior might be related to these biochemical parameters.

Keywords: high licking, low licking, hippocampus, olfactory bulb, DNA damage.

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