Oxidative Stress in Brain Mitochondria of 21 Months Old Rats and the Acute Action of the Medicinal Mushroom *Agaricus brasiliensis* (*A. blazei*)

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Reactive oxygen species (ROS) are involved in the mechanism of several neurodegenerative processes related to ageing. The mushroom *Agaricus brasiliensis*, has been amply utilized in popular medicine as a potential therapeutic agent for treatment of several diseases. In the present study, we evaluated the action of an aqueous extract of *A. blazei* on the oxidative state of brain mitochondria of old rats. Male Wistar rats, (with 21 months) were treated orally during 21 days with an aqueous *A. brasiliensis* extract (200 mg kg$^{-1}$ day$^{-1}$). Control rats (same age, aged rats) were treated with saline. Brain mitochondria were isolated and used for the determination the following oxidative state markers: TBARS, GSH, ROS and the activities of the antioxidant enzymes catalase (CAT), superoxide dismutase (SOD) and glutathione peroxidase (GPx). Brain mitochondria of rats that were 3 months old were also processed. These rats comprise the adult controls. The results revealed that both the TBARS and ROS levels were increased with ageing. However, the *A. brasiliensis* treatment significantly reduced these parameters in aged rats. Ageing decreased the GSH levels and the activity of the enzymes CAT and SOD but not the activity of GPx. *A. brasiliensis* treatment, however, restored the GSH levels and the activity of CAT and SOD in aged animals. It can be concluded that the aqueous extract of *A. brasiliensis* is able to improve the oxidative state of old rats. This finding corroborates the general believe about the health beneficial actions of *A. brasiliensis*.

Key words: ageing, brain mitochondria, *A. brasiliensis*  
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