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The beneficial effect of extracts from *Eucalyptus globulus* leaves on modulation of antioxidant enzymatic defense system

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Phenolics are the main compounds in *Eucalyptus globulus* leaves responsible for antioxidant activity. Oxidative stress has been proposed as major factor in the pathogenesis of neurodegenerative diseases. The upregulation of antioxidant enzymes such as catalase (CAT), superoxide dismutase (SOD), glutathione reductase (GR) and glutathione peroxidase (GPx) constitute a target protective mechanisms against oxidative stress.

The aim of the present work is to evaluate the effect of different varying polarity extracts from *Eucalyptus* leaves on modulation of antioxidant enzymatic defense system. We have employed an *in vitro* cellular model of human neuroblastoma SH-SY5Y cells under hydrogen peroxide-induced oxidative stress conditions. Cells were pretreated with different concentrations of acetone, ethanol and methanol extracts for 24 h previous to the exposure to hydrogen peroxide (0.1 mM, 30 min). The activities of the antioxidant enzymes CAT, SOD, GR and GPx were significantly reduced after H_2O_2 treatment. Pretreatments with acetone, ethanol and methanol extracts increased antioxidants enzymes activities compared to H_2O_2-treated cells. Particularly highlights the protective effect of acetone extract at the concentration of 50 µg/mL and ethanol and methanol extracts at the concentration of 10 µg/mL. These results suggest that extracts from *E. globulus* leaves exert a neuroprotective effect through modulation of antioxidant enzymatic defense system, positively impacting in health properties.