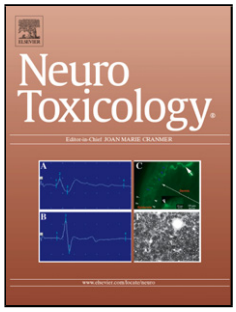

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Aminochrome decreases NGF, GDNF and induces neuroinflammation in organotypic midbrain slice cultures

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*Highlights

- Aminochrome induces toxicity in midbrain slice cultures
- Aminochrome induces neuroinflammation in midbrain slice cultures
- Aminochrome reduces NGF and GDNF mRNA levels

Abstract

Recent evidence shows that aminochrome induces glial activation related to neuroinflammation. This dopamine derived molecule induces formation and stabilization of alpha-synuclein oligomers, mitochondria dysfunction, oxidative stress, dysfunction of proteasomal and lysosomal systems, endoplasmic reticulum stress and disruption of the microtubule network, but until now there has been no evidence of effects on production of cytokines and neurotrophic factors, that are mechanisms involved in neuronal loss in Parkinson's disease (PD). This study examines the potential role of aminochrome on the regulation of NGF, GDNF, TNF-α and IL-1β production and microglial activation in organotypic midbrain slice cultures from P8 - P9 Wistar rats. We demonstrated aminochrome (25 µM, for 24 h) induced reduction of GFAP expression, reduction of NGF and GDNF mRNA levels, morphological changes in $Iba1^+$ cells, and increase of both TNF-α, IL-1β mRNA and protein levels. Moreover, aminochrome (25 µM, for 48 h) induced morphological changes in the edge of slices and reduction of TH expression. These results demonstrate neuroinflammation, as well