Evaluation of the Antioxidant Activity of Neem Leaves Extracts Obtained with Different Polarity Solvents

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Neem (*Azadirachta indica* A. Juss, Meliaceae) is an Indian native tree that had a great adaptation in Brazil where is commercially used as insecticide. Several biological activities are described to Neem although the literature is lacking in mechanistic studies. The anti-carcinogenic activity attributed to Neem seems to be related to the enhancement of cellular antioxidant capacity. Our previous studies showed that glycolic extract of Neem leaves presented a potent antioxidant action in an isolated mitochondrial model system. In this study, we investigated the antioxidant activity of Neem leaves extract obtained with different polarity solvents (hexane, dichloromethane, ethyl acetate and methanol) to identify the fraction that contains the substances responsible for the antioxidant activity. All extracts were prepared by percolation method and the solvent was evaporated in a low pressure system. Our results showed that the methanolic extract of Neem leaves was the most potent inhibitor of lipid peroxidation of mitochondrial membrane induced by Fe^{2+}/citrate, followed by hexane, ethyl acetate and dichloromethane extracts. The results obtained in the DPPH reduction assay accompanied the lipid peroxidation data, suggesting that the antioxidant activity exhibited is, at least, partially due to free radical scavenger activity. The quantification of the total phenols and flavonoids, substances with well-known antioxidant properties, suggested that other substances than polyphenols contribute to the antioxidant activity observed for *A. indica*.

Keywords: Neem leaves, antioxidant activity, solvent extraction, polyphenols, mitochondria.
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