

Antidepressive-like effect of a vinylic telluride: possible involvement of MAO-A activity

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Depression is a common chronic recurrent syndrome that affects the quality of life and overall productivity in almost everyone who suffers with this illness. Oxidative stress has been reported to play an important role in the genesis of depression. Clinical studies have shown that patients with major depression have elevated antioxidant enzyme activity and increased lipid peroxidation. Thus, as related in previous studies of our group that diethyl-2-phenyl-2-tellurophenyl vinylphosphonate (DPTVP) has antioxidant properties, we decided to investigate whether this compound exerts antidepressant-like activity using rodent models and in vitro tests. Adult male swiss albino mice were used in the experiments. In the forced swimming test (FST), 30 minutes pre-administration of DPTVP showed antidepressant-like activity from 1 to 100 $\mu\text{mol/Kg}$ (i.p), similar effect to amitriptyline, our positive control. We choose an intermediary dose of DPTVP (10 $\mu\text{mol/Kg}$) to examine the possible mechanism of action. We investigated several pathways, such as adrenergic, serotonergic and by the nitric oxide pathway and observed that the antidepressant-like activity of DPTVP is not related to these pathways. Furthermore, in order to investigate whether the DPTVP could influence on the monoamino oxidase (MAO) activity, we pre-treated mice with DPTVP and after 30 min we measured MAO –A and B activities. We observed that DPTVP decreased MAO-A activity. As MAO-A is an isozyme of MAO that preferentially deaminates norepinephrine (noradrenaline), adrenaline, serotonin, and dopamine, it is possible that the antidepressant-like activity of the DPTVP could be, at least in part, related to the reduced metabolism and inactivation of these endogenous antinociceptive substances.

Keywords: tellurium, antidepressive-like, diethyl-2-phenyl-2-tellurophenyl vinylphosphonate, monoamino oxidase.