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Paraquat exposure induce after acute and repeated exposure cholinergic transmission disruption in primary hippocampal neuronal cells

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Paraquat (PQ) is a widely used non-selective contact herbicide shown to produce memory and learning deficits after acute and repeated exposure similar to those induced in Alzheimer's disease (AD). However, the complete mechanisms through which it induces these effects are unknown. On the other hand, cholinergic systems mainly in the hippocampus are involved on learning, memory and cell viability regulation. Alteration of hippocampal cholinergic transmission may induce these effects. In this regard, it has been described that PQ mediated cholinergic transmission alteration in other brain regions. According to these data, we hypothesized that PQ could induce cholinergic transmission alteration in hippocampal cells. To prove this hypothesis, we evaluated in hippocampal primary cell culture, the PQ toxic effects after 24h and 14 consecutive days exposure to the cholinergic alteration mechanisms. This study shows that PQ impaired acetylcholine levels and induced AChE inhibition and increased CHT expression only after 14 days exposure, which suggests that acetylcholine levels alteration could be mediated by these actions. Our present results provide new view of the mechanisms contributing to PQ neurotoxicity and may explain cognitive dysfunctions observed after PQ exposure.

Biography

Paula Moyano received his JD degree at the University Complutense University of Madrid in 2013. She has a Masters in Pedagogical Sciences 2017. She specialized in neurotoxicology and legal sciences and received his PhD in Toxicology and legal medicine in 2016.

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