

## Behavioral and Neurochemical Effects of Silymarin in a Parkinsonism Model Induced by 6-OHDA in Mice

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**INTRODUCTION:** Parkinson's disease (PD) is a neurodegenerative disease associated with alterations in dopaminergic system, mainly in nigrostriatal pathway. 6-hydroxydopamine (6-OHDA) produces in rodents biochemical and cellular changes similar to PD in humans. Silymarin is a complex of flavonolignans derived from the seeds of the plant *Silybum marianum* and has mainly antioxidant and neuroprotective effects. **OBJECTIVE:** The purpose of this study was to examine the effects of silymarin in a parkinsonism model induced by 6-OHDA in mice. **MATERIALS AND METHODS:** Swiss male mice received a single intracerebroventricular infusion (i.c.v) of 6-OHDA (60µg). One week after the 6-OHDA infusion, mice were treated with different doses of silymarin (10, 30 and 100 mg/kg, intraperitoneal route) during seven consecutive days. On the 14<sup>th</sup> day, motor coordination and striatal tyrosine hydroxylase, dopamine transporter and D2 receptor immunoreactivity were measured. Experimental protocol was approved by internal ethical commission of UFSM under the number 4398020415/2015. **RESULTS AND DISCUSSION:** Our data demonstrated that silymarin was able to improve 6-OHDA-induced motor imbalance significantly ( $p < 0.05$ ) in a dose dependent manner. However, silymarin did not show neuroprotective effect against 6-OHDA-induced reduction in tyrosine hydroxylase immunoreactivity. Furthermore, we did not find any difference among the groups when dopamine transporter immunoreactivity was evaluated. Also, the 6-OHDA caused a marked increase in striatal D2 receptor immunoreactivity ( $p < 0.05$ ) and silymarin was not able to recover this effect. These results indicate a possible adaptive or compensatory mechanism due the depletion of striatal dopamine levels. **CONCLUSION:** We suggest that silymarin can be a natural product useful for treatment of PD. However, more studies must be performed to investigate its mechanism of action with the aim of exploring the whole therapeutic potential of this flavonoid.

**Keywords:** Dopaminergic System; Parkinson's disease; *Silybum marianum*.

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