



PLUMERIDE PROMOTES IMPROVEMENTS IN MOTOR, MEMORY AND OLFACTORY PARAMETERS IN A MODEL OF PARKINSON'S DISEASE IN RATS

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INTRODUCTION

Parkinson's disease (PD) is a chronic neurodegenerative disorder characterized by the progressive and irreversible loss of dopaminergic brain neurons located in the substantia nigra compact (SNc). Symptoms include motor, sensory, gastrointestinal and genitourinary. Currently, treatment is limited to drugs that improve the efficiency of the dopaminergic system or mimic the effects of dopamine in the brain and drugs that block NMDA-type glutamate receptors. Plumeride (PLU) is an iridoid glycoside derived from the secondary metabolism of *Allamanda cathartica*, exhibiting antioxidant, anti-inflammatory, antidepressant and anxiolytic effects. The research aims to evaluate the effects of PLU on olfactory, memory and motor parameters of rats subjected to an experimental model of PD induced by carbonyl iron.

MATERIAL AND METHODS

Male and female Wistar rats, 12 days old (20g) received orally a daily dose (30mg/kg) of Carbonyl Iron (FC) or vehicle (distilled water), for 3 days (Day 12, 13 and 14 after birth). After weaning, they were separated into 6 distinct groups by sex. After 120 days of life, the animals received the treatment (G1/vehicle-vehicle, G2/FC-vehicle, G3/FC-PLU 1mg/kg, G4/FC-PLU 5mg/kg, G5/FC-PLU 15mg/kg and G6/FC-L-DOPA (6mg/kg) for 15 days orally,

extending until the tests. Olfactory Discrimination (TDO), Object Recognition (TRO) and Rota Rod (RR) tests were performed. All experimental protocols were approved by the Ethics Committee (CEUA 015/24).

RESULTS

Treatment with PLU in the three doses caused an improvement in the olfactory capacity of both sexes ($p < 0.05$), compared to the induced group (G2) in the TDO. The three doses of PLU improved the recognition index compared to the induced group (G2) in males and females ($p < 0.05$). The time spent on the bar and the number of falls in the RR were improved by the dose of 15mg/kg in males compared to the induced group (G2) ($p < 0.05$) with no differences in females.

CONCLUSIONS

PLU improved olfactory capacity and recognition memory in both sexes, and promoted motor improvement in males at the highest dose. The findings suggest neuroprotective effects, indicating therapeutic potential in PD, highlighting the need for further investigations to elucidate its mechanisms of action and clinical viability.

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