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Evaluation of the effect of some medicinal plant on the rotenone induced parkinson disease in rats

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Parkinson's disease (PD) is one of the most common neurodegenerative disorder characterized by bradykinesia, tremor, rigidity and postural instability. These symptoms are attributed to selective and progressive degeneration of the dopaminergic neurons in substantia nigra pars compacta (SNc) and subsequent loss of neurons accompanied by dopamine decline in the striatum. The primary cause for these degenerations is still unknown but increasing evidence suggests that combination of genetic and environmental factors including pesticides, metals and solvents may have important roles in the pathogenesis of PD. Familial PD is thought to be connected to mutations in identified genes whereas the etiology of sporadic PD is not completely understood.

On the basis of experimental and clinical findings, Parkinson's disease (PD) was the first neurological disease to be modeled and, subsequently, to be treated by neurotransmitter replacement therapy. Agents that selectively disrupt or destroy catecholaminergic systems, such as reserpine, methamphetamine, 6-hydroxydopamine and 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine have been used to develop PD models. Transgenic animals that over-express alpha-synuclein are used to study the role of this protein in dopaminergic degeneration. Recently, it has been found that agricultural chemicals, such as rotenone and paraquat, when administered systemically, can reproduce specific features of PD in rodents, apparently via oxidative damage.

The aim of the present study is to investigate the neuroprotective effect of some Moroccan medicinal plants on the rotenone induced PD rats.

Animal model will be developed using stereotaxic surgery, in the second part of this study, we will investigate the effect of some Moroccan medicinal plants on these neural pathologies, for this, methanol extracts and purified natural molecules are studied both *in vitro* to investigate their modulation of calcium channels, and *in vivo* by studying their effect on animal models.

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