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PII: S1043-6618(15)00133-4
DOI: http://dx.doi.org/doi:10.1016/j.phrs.2015.06.019
Reference: YPHRS 2862

To appear in: *Pharmacological Research*

Received date: 20-3-2015
Revised date: 19-6-2015
Accepted date: 19-6-2015

Please cite this article as: Sánchez-Vallejo V, Benlloch-Navarro S, López-Pedrajas R, Romero FJ, Miranda M.Neuroprotective actions of progesterone in an in vivo model of retinitis pigmentosa.*Pharmacological Research* http://dx.doi.org/10.1016/j.phrs.2015.06.019

Neuroprotective actions of progesterone in an in vivo model of retinitis pigmentosa

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Abstract

Progesterone has been shown to have neuroprotective effects in experimental acute brain injury models, but little is known about the effects of steroid sex hormones in models of retinitis pigmentosa (RP). The aim of this study was to asses whether progesterone had a protective effect in one animal model of RP (the rd1 mice), and whether its action was due at least in part, to its ability to reduce free radical damage or to increase antioxidant defences.

Rd1 and wild type (wt) mice received an oral administration of 100 mg/kg body/weight of progesterone on alternate days starting at postnatal day 7 (PN7) and were sacrificed at different postnatal days.

Our results show that progesterone decreases cell death, as the number of TUNEL-positive cells were decreased in the ONL of the retina from treated rd1 mice. At PN15, treatment with progesterone increased values of ERG b-wave amplitude ($p<0,5$) when compared with untreated mice. Progesterone also decreased the observed gliosis in RP, though this effect was transient. Treatment with progesterone significantly reduced retinal glutamate concentrations at PN15 and PN17. To clarify the mechanism by which progesterone is able to decrease retinal glutamate concentration, we examined