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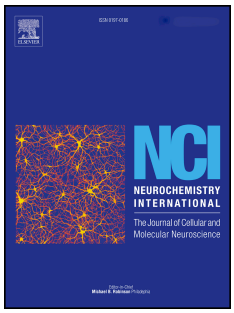

Yeast red pigment modifies cloned human α-synuclein pathogenesis in Parkinson disease models in *Saccharomyces cerevisiae* and *Drosophila melanogaster*

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Yeast red pigment modifies cloned human α-synuclein pathogenesis in Parkinson disease models in *Saccharomyces cerevisiae* and *Drosophila melanogaster.*

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Running title: Red pigment effects in a yeast/ fruit fly model of PD

Abbreviations used: AIR,1-(5'-Phosphoribosyl)-5-aminoimidazole; ER, endoplasmic reticulum; F_M, the mobile fraction; FRAP, fluorescence recovery after photobleaching; HR, MR, LR, α-synuclein inclusion fractions differing in recovery degree – high, medium, and low, respectively; SD, liquid synthetic defined medium; PBS, phosphate buffered saline; PD, Parkinson's disease; PI, propidium iodide; [PSI], prionized yeast translation termination factor; ROS, reactive oxygen species; RP, red pigment; SD, standard deviation; SDS, sodium dodecyl sulfate; SEM, standard error of the mean; SNAC.A30P, the A30P human mutant α-synuclein form; SNCA.A53T, *Drosophila* strain carrying the A53T human mutant α-synuclein form; SNCA.WT, *Drosophila* strain carrying human wild-type α-synuclein insertion; SNpc, *substantia nigra pars compacta*; α-syn-GFP,α-synuclein fused with green fluorescent protein; YEPD, standard complete media for yeast.

Keywords: amyloid, Parkinson's disease, α-synuclein, red pigment, yeast, *Drosophila*

ABSTRACT

Recently, we identified the yeast red pigment (RP), a polymer of 1-(5'-Phosphoribosyl)-5-aminoimidazole, as a novel potential anti-amyloid agent for the therapy of neurodegenerative diseases. The purpose of this study was to further validate RP for treatment of Parkinson's disease (PD) and to clarify molecular mechanisms involved in the reduction of amyloid cytotoxicity. We investigated RP effects *in vivo* using *Saccharomyces cerevisiae* and *Drosophila melanogaster* PD models. Western blot analysis revealed reduction in the levels