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Neuroprotective effect of *Withania somnifera* root extract incorporated organic tea in Parkinsonism

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In the present study *Withania somnifera* root extract was incorporated with extracts prepared from organically grown varieties of tea (*Camellia sinensis*) and their effects on parkinsonism was demonstrated in mice model induced by 1 -methyl 4-phenyl 1,2,3,6-tetrahydropyridine (MPTP; i.p, 20 mg/kg body weight for 4 days). Pretreatment of mice with either green tea extract (0.5 and 1 mg/kg) or (±)-Epigallocatechin-3-gallate (2 and 10 mg/kg) prevented MPTP induced dopaminergic neuronal loss in subtantia nigra. The neurotoxin (MPTP) elevated striatal antioxidant enzyme activities i.e. superoxide dismutase (240%) and catalase (165%); both effects being prevented by (±)-Epigallocatechin-3-gallate which itself increased the activities of the enzymes in brain. It was found that organically grown TV25 variety having the highest polyphenol content in comparison to other inorganically grown tea varieties. *Withania somnifera* (WS) root extract (100mg/kg) or *Withaferin A* (150mg/kg) prevented the increase in SOD and Catalase activities in MPTP induced rats. The SOD and Catalase activities in control group were 0.75±0.06 U/mg and 0.56±0.04 U/mg respectively. Other groups treated with MPTP+Tea, MPTP+WS and MPTP+Tea+WS extract(3:1) ratio, the SOD and Catalase activities were 0.98±0.16 U/mg and 0.67±0.07 U/mg (MPTP+Tea), 1.16±0.15 U/mg and 0.98±0.08 U/mg (MPTP+WS), 0.82±0.07 U/mg and 0.64 U/mg (MPTP+tea+WS extract) respectively. From the results it might be concluded that administration of WS incorporated tea extract to MPTP treated mice tends to bring the SOD and Catalase values more close to normal than treating with only tea or WS. [For SOD the U/mg =amount of enzyme required to inhibit 50% of NBT reduction, for Catalase U/mg=µmoles of H2O2 consumed/min/mg protein. Values are expressed as means ± SD (n = 6).]

Biography

Ananya Bagchi is a research scholar of Agricultural and Food Engineering department of IIT Kharagpur. She is continuing her PhD in Therapeutic effect of different tea phytochemicals on human health as well as different plant's secondary metabolites on neurodegenerative disorders like Alzheimers, Parkinsonism etc. She has done MTech also from IIT Kharagpur.

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