
Dopamine, serotonin and noradrenaline changes in the striatum of C57BL mice following myelin oligodendrocyte glycoprotein (MOG) 35-55 and complete Freund adjuvant (CFA) administration

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Abstract. Many data suggest involvement of inflammation in neurodegeneration. However, the exact mechanisms of this cooperation are poorly understood. We have previously shown that induction of inflammatory reaction, both before and after injury of the striatum, affects regeneration of dopaminergic neurons. In the present research we studied the role of inflammatory reaction in non-injured striatum. We used myelin oligodendrocyte glycoprotein (MOG) 35-55 in complete Freund's adjuvant (CFA) to elicit experimental autoimmune encephalomyelitis (EAE) mice model. As determined by HPLC, striatal dopamine (DA) and serotonin levels in mice treated with either MOG 35-55 in CFA or CFA alone were significantly higher compared to vehicle-treated controls on 13th day after induction. The ratio of homovanilic acid/dopamine (HVA/DA) and 3, 4 dihydroxyphenylacetic acid/dopamine (DOPAC/DA) were significantly lower in the MOG and CFA groups on 13th day, indicating decreased DA metabolism. Noradrenaline (NA) concentration did not differ between groups. Moreover, the striatal mRNA IL-1 β and TNF- α levels were elevated during induction phase of EAE in both groups, as determined by RT-PCR. Our data indicate regulatory connection between dopaminergic and immune systems.

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