Neurochemical and behavioral effects of 8-OH-DPAT following exposure to restraint stress in rats

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Abstract:
8-Hydroxy-2-(di-n-propylamino)tetralin (8-OH-DPAT), a selective 5-hydroxytryptamine 1A (serotonin; 5-HT1A) agonist was used to evaluate the role of somatodendritic and/or postsynaptic 5-HT1A receptors following exposure to restraint stress. Exposure to an episode of 2-h restraint stress decreased 24 h cumulative food intake. Intensity of 8-OH-DPAT-induced 5-HT syndrome monitored next day was smaller in restrained than unrestrained animals. Hyperphagic effects of 8-OH-DPAT were comparable in the two groups. Restrained animals injected with saline exhibited an increase in 5-HT levels in the hippocampus, hypothalamus and cortex but not in the midbrain and striatum. 5-Hydroxyindolacetic acid (5-HIAA) increased in the hippocampus, midbrain and cortex but not in the hypothalamus and striatum. 8-OH-DPAT injected at a dose of 0.25 mg/kg decreased 5-HT and 5-HIAA levels in different brain regions of unrestrained as well as restrained animals. The decreases were greater in restrained than unrestrained animals, suggesting a supersensitivity of somatodendritic 5-HT1A receptors. The results are discussed in the context of a role of 5-HT1A receptor in restraint-induced behavioral deficits.

Key words: restraint stress, 8-OH-DPAT, 5-HT syndrome, hyperphagia, somatodendritic 5-HT1A receptor