

# EFFECTS OF SELECTIVE LESIONS OF THE MEDIAL SEPTAL NEURONS ON EXPLORATORY BEHAVIOUR AND RECOGNITION MEMORY

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Investigation of cholinergic system and memory interaction has especially become the object of scientific attention due to the clinical and experimental data, in which the severity of dementia in Alzheimer's disease (AD) was found to have a positive correlation with the extent of the cholinergic loss. The animal models of cortical and hippocampal cholinergic depletion have been widely used to induce relevant cognitive deficits for the purpose of identifying potential new therapeutic compounds for the treatment of AD. The septum is connected to the hippocampus via the fimbria-fomix, these projection are predominantly cholinergic and GABAergic. Lesions of the fimbria-fomix, or electrolytic lesions of the MS, impair hippocampal-dependent learning and memory. The observation of similarities between cognitive processing in the rat and human is important, but the development of a reliable rat model of recognition memory deficit also provides a powerful tool for development of drugs for AD and neurodegenerative diseases. The purpose of this study was to investigate ability to acquire and use spatial (or non-spatial) information as well as to habituate exploratory activity over time in sham-operated, electrolytic, neuro- or immunotoxic MS lesioned rats. The animals were randomly assigned to different experimental groups. Animals were tested in an open field. Our results indicated that: MS is sufficient for spatial recognition, but is not sufficient for object recognition memory; the selective loss of septohippocampal cholinergic or noncholinergic projections does not disrupt the function of the hippocampus to a sufficient extent to impair spatial recognition memory. Therefore, the present study demonstrates dissociation between the two major components (cholinergic and noncholinergic) of the septohippocampal pathway in exploratory behaviour assessed in the open field.

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