

Muscarinic Modulation of Striatal Acetylcholine Release Monitored by *in vivo* Microdialysis in Rats

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The purpose of the present study was to compare the effects of different muscarinic agonists and antagonists on the extraneuronal acetylcholine (ACh) concentration, in the striatum, using the *in vivo* microdialysis method.

Brain dialysis has been widely used in order to obtain information on the neurotransmitter release, in discrete rat brain regions either after systemic drug administration or after drug delivery to the selective brain region. In order to determine the site specific effects of different cholinergic agents, different concentrations of the drugs were either perfused through the microdialysis probe or injected subcutaneously (s.c.) or intraperitoneally (i.p.) into the anaesthetized rat. Striatal ACh content of the perfusates was measured using High Performance Liquid chromatography (HPLC) assay with electrochemical detector (EC). Various doses of the following drugs

were tested: scopolamine, pirenzepine and AFDX-116 (muscarinic antagonists), pilocarpine, oxotremorine, McN-A-343 and AF150(S) (muscarinic agonists). The data from the *in vivo* microdialysis studies (HPLC assays) were examined using a repeated-measures analysis of variance (ANOVA).

Scopolamine, pirenzepine and AFDX-116 induced a dose dependent increase while oxotremorine induced a decrease in striatal ACh release. It is worth noting that pilocarpine like AF150(S) induced an increase in ACh release while McN-A-343 did not induce any change in the striatal ACh extraneuronal concentration.

Taken together the above mentioned results indicate that there is a differential modulation of striatal ACh release, following treatment with various muscarinic agents, and different types of muscarinic receptors are possibly involved.