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Minor alkaloids of tobacco release [3H]dopamine from superfused rat striatal slices.

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Abstract

In addition to S(-)-nicotine, several minor tobacco alkaloids ((+/-)-nornicotine, anabaseine, S(-)-anabasine, and S(-)-N-methylanabasine) are present in tobacco smoke. This study demonstrates that these alkaloids increase fractional 3H release in a concentration-dependent manner from rat striatal slices preloaded with [3H]dopamine, with desensitization of this response. The rank order of EC₅₀ values was S(-)-nicotine (3.0 +/- 2.2 microM) > (+/-)-nornicotine (6.7 +/- 2.1 microM) > anabaseine (15.4 +/- 6.1 microM) = S(-)-N-methylanabasine (16.3 +/- 4.7 microM) = S(-)-anabasine (19.3 +/- 3.2 microM). The alkaloids did not modulate fractional 3H release evoked by electrical-field depolarization. Thus, minor tobacco alkaloids may contribute to the apparent neuroprotective effects of smoking in neurodegenerative diseases.