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Synthesis and Transporter Binding Properties of 3β-(4'-Alkyl-, 4'-alkenyl-, and 4'-alkynylphenyl)nortropane-2β-carboxylic Acid Methyl Esters: Serotonin Transporter Selective Analogs


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Cocaine has several biological sites of action in the human brain, including receptors and transporters related to the neurotransmitters dopamine, serotonin, and norepinephrine. Of these, the dopaminergic system has been linked to many of the reinforcement and reward properties of addictive drugs, also known as “the dopamine hypothesis” of addiction.

In order to explore these sites of action, it was necessary to synthesize analogs of cocaine selective for each of the sites of action. Such compounds serve as chemical tools intended to probe the effects of each site of action on other parts of the brain and on behaviors related to the use of cocaine. The compounds reported in this publication are serotonin transporter selective 3-phenyltropanes, a stable, long-acting class of cocaine analogs. These tools can be used to study the effects of serotonin transporter selective compounds in animal behavioral models of addiction and depression. The biological activity of these compounds is analogous to the selective serotonin reuptake inhibitor (SSRI) class of antidepressants and, thus, may be useful as antidepressants.

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