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The cannabinoids as potential antiepileptics.

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Abstract

Comparative studies of the anticonvulsant properties of the cannabinoids and prototype antiepileptic drugs in numerous animal seizure models demonstrate that (1) as an anticonvulsant, cannabidiol (CBD), in contrast to delta 9-tetrahydrocannabinol (THC), is relatively selective in terms of both central nervous system (CNS), depressant and excitatory properties; (2) the potency of cannabidiol, unlike that of phenytoin and phenobarbital, varies greatly with the species; (3) the large potency difference between the cannabinoids and the antiepileptics in the mouse appears to be due to dispositional differences, because brain concentrations of all the drugs are very similar; (4) tolerance to the anticonvulsant properties of cannabidiol is not a prominent feature; in three seizure models, tolerance developed in one, but "reverse tolerance" developed in the other two; and (5) the results of a study of the electrophysiologic mechanisms of action indicate that cannabidiol produces some unique effects and that its spectrum of antiepileptic activity may be different from that of the prototype drugs. The anticonvulsant nature of cannabidiol suggests that it has a therapeutic potential in at least three of the four major types of epilepsy: grand mal, cortical focal, and complex partial seizures.

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