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### Title

BICUCULLINE-INDUCED ELECTROCORTICOGRAPHIC AND BEHAVIORAL SEIZURES IN THE IMMEDIATELY POSTNATAL RAT

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### 125. Bicuculline-induced Electrographic and Behavioral Seizures in the Immediately Postnatal Rat

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The effects of bicuculline, a gamma-aminobutyric (GABA)<sub>A</sub> receptor inhibitor, on infant rats are delineated. Two hundred forty-four animals, aged 3 to 22 days, were observed and videotaped for 30 minutes prior to and following in-

traperitoneal bicuculline for CD<sub>50</sub> determination. Electrographic-behavioral correlation was achieved in a separate group of pups implanted with cortical electrodes prior to bicuculline administration. Bicuculline-induced electrographic and behavioral epileptic events began on the third postnatal day, with a latency of 1 to 5 minutes; hyperkinesia was followed by extremity and/or tail extension, and the latter was accompanied by electrographic sharp waves. Generalized tonic seizures could be seen on the fifth day, and were more prominent after the first week, while clonic events

started at the end of the second week. The bicuculline dose resulting in seizures in 50% of rats (CD<sub>50</sub>) was determined on postnatal days 3, 5, 7, 10, 15, and 22, and was found to be highly age dependent. The CD<sub>50</sub> was lowest on the third postnatal day.

Age (day)	CD <sub>50</sub> (mg/kg)	Fiducial Intervals (95%)
3	0.91	0.69-1.24
5	1.04	0.82-1.54
7	2.01	1.87-2.17
10	2.81	2.00-3.97
15	1.77	1.33-2.35
22	3.80	3.12-4.60

During the first postnatal week, the rat brain is quite immature in comparison with the brain of other laboratory animals or of the human infant. Bicuculline may be applicable to epilepsy research in the rat during the first postnatal week, since it perturbs the relatively early-maturing inhibitory GABA system.