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The Effects of Fluoxetine on Sensory-Evoked Responses in the Neonatal Rat Barrel Cortex

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Abstract

© 2016, Springer Science+Business Media New York.Inhibition of serotonin uptake disrupts the development of thalamocortical barrel maps in neonatal rodents. Previous studies, using the selective serotonin reuptake inhibitor citalopram, have suggested that this may involve a suppression of the early activity in the developing cortex. Here, we addressed the acute effects of another frequently used serotonin uptake inhibitor, fluoxetine (10–120 mg/kg, intraperitoneally), on the sensory-evoked electrical responses in the neonatal (postnatal days P2-6) rat barrel cortex. We found that the administration of fluoxetine minimally affected the sensory-evoked responses in the rat pups. Two hours after the fluoxetine administration, there was a slight increase in the sensory-evoked potential (SEP) onset latency. There also was a tendency of SEP's amplitude to decrease, but this was not significant. Fluoxetine also had no significant effect on the multiple unit activity during the SEP and sensory-evoked bursts and neither did it affect the spontaneous multiple unit activity. We suggest that the inhibitory effects of fluoxetine on the activity in the neonatal rat barrel cortex are much weaker, or that they develop over a slower time scale, than those evoked by citalopram, probably reflecting a lower potency of fluoxetine to inhibit the serotonin uptake.

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Keywords

Barrel cortex, Electroencephalography, Neonate, Serotonin, Serotonin uptake inhibitors

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