

Abstract

Inositol 1,4,5-tris phosphate (IP3), a cellular second messenger of excitatory neurotransmitter system, by interacting with membrane IP3 receptor can mobilize calcium from internal stores. Regional binding properties of IP3 receptor were measured after lateral fluid percussion (FP) brain injury in rats. At 5 min postinjury, a significant decrease in the IP3 receptor density was found only in the ipsilateral left hippocampus. At 20 min after injury, significant decreases were observed in both the receptor density and the half maximal reduction of IP3, binding in both the injured left cortex and ipsilateral hippocampus. These findings suggest that increases of ligand affinity to the IP3 receptor after brain injury. This change in the IP3 receptor in concert with the increased IP3 (21) may facilitate a possible IP3 action of calcium mobilization in the brain regions that undergo neuronal cell loss after brain injury.