

# Journal of Neurotrauma

## Regional Concentrations of Cyclic Nucleotides After Experimental Brain Injury

### To cite this article:

H.S. DHILLON, L. YANG, B. PADMAPERUMA, R.J. DEMPSEY, R.R. FISCUS, and M. RENUKA PRASAD. Journal of Neurotrauma. DECEMBER 1995, 12(6): 1035-1043. doi:10.1089/neu.1995.12.1035.

**Published in** Volume: 12 Issue 6: January 29, 2009

### Author information

**H.S. DHILLON,1L. YANG,2B. PADMAPERUMA,1R.J. DEMPSEY,1R.R. FISCUS,2M. RENUKA PRASAD1**

### ABSTRACT

Regional concentrations of lactate, glucose, cAMP, and cGMP were measured after lateral fluid percussion brain injury in rats. At 5 min after injury, while tissue concentrations of lactate were elevated in the cortices and hippocampi of both the ipsilateral and contralateral hemispheres, those of glucose were decreased in these brain regions. By 20 min after injury, increases of lactate concentrations and decreases of glucose concentrations were observed only in the cortices and in the hippocampus of the ipsilateral hemisphere. Whereas the cAMP concentrations were unchanged in the cortices and hippocampi of the ipsilateral and contralateral hemispheres at 5 min after injury, decreases were found in the injured cortex and ipsilateral hippocampus at 20 min after injury. The tissue concentrations of cGMP were found to be elevated only in the ipsilateral hippocampus at 5 min after injury. The present observation that tissue glucose decreases in the injured cortex and the ipsilateral hippocampus are consistent with the published findings of increased hyperglycolysis and oxidative metabolism in brain immediately after injury. The present findings that the concentrations of cAMP and cGMP change in the cortex and hippocampus provide biochemical evidence for the neurotransmitter's surge after brain injury.

**Key words:** brain injury; fluid percussion; cyclic adenosine monophosphate; cyclic guanosine monophosphate; glucose; lactate