P073 Traumatic injury to the medial prefrontal cortex results in immediate and prolonged increases in glutamate, aspartate and GABA release remote from the site of injury.

Aoife Smyth, Michael Gilchrist[1] and William T. O'Connor
Department of Physiology, The Conway Institute of Biomedical and Biomolecular Research and [1]Department of Mechanical Engineering, University College Dublin, Ireland

We investigated changes in glutamate, aspartate and GABA in the left ventral tegmental area (VTA) following a mild (0.87 mm deformation) or severe (2.62 mm deformation) impact to the ipsilateral medial prefrontal cortex (mPfc). Anaesthetised rats were subjected to an impact to the mPfc followed by implantation of a microdialysis probe into the ipsilateral VTA and dialysate samples were collected and analysed by high performance liquid chromatography (HPLC).
Glutamate (1.7-fold following mild, 1.9-fold following severe impact) and aspartate release (1.9-fold following mild, 2.1 following severe) was increased in the VTA relative to non-impacted controls 25 min after injury to the mPfc. In contrast, VTA GABA levels were not altered. Furthermore, 225 min after impact the increases in glutamate (2-fold following mild, 5.2-fold following severe) and aspartate (2-fold following mild, 2.8 fold following severe) release was still present. The increase in GABA release (1.6-fold following mild, 1.2-fold following severe impact) tended to be higher following mild rather than severe impact. Thus, we show immediate and prolonged increases in dialysate amino acid levels remote from the site of injury.