**Effect of acute sleep fragmentation upon morphology and density of astrocytes in hippocampal and hypothalamic tissue**

Many people are suffering from sleep fragmentation (SF) as a secondary symptom of sleep apnea, Alzheimer’s disease, Parkinson’s disease, and more. Previous research has indicated that one type of glial cell, microglia, are activated in the mouse brain following sleep fragmentation (SF). Another type of glial cell, astrocytes, develop a unique morphology in response to central nervous system (CNS) trauma and increase in numbers in the affected area. To test the effects of acute SF on astrocytes, five male adult C57BL/6j mice were exposed to a SF chamber for 24 hours (60 forced arousals per hour), whereas controls (N = 4) were taken from home cages. Brain tissue was collected from mice following perfusion with ice-cold PBS and then 4% paraformaldehyde. Brain sections were stained for glial fibrillary acidic protein (GFAP) using immunocytochemistry. Astrocytes in the ventromedial hypothalamus and CA3 region of the hippocampus were counted, and processes from five astrocytes in each sample were measured. Acute sleep fragmentation led to astrocyte process elongation in both regions and an increased density of astrocytes in the hypothalamus. These results suggest that acute SF leads to astrogliosis in both the hippocampus and hypothalamus, with greater severity in the hypothalamus.