



Short communication

Different pattern of changes in calcium binding proteins immunoreactivity in the medial prefrontal cortex of rats exposed to stress models of depression

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Abstract:

Reductions in the number and size of neurons in the medial prefrontal cortex (mPFC) have been documented in many post-mortem studies of depressed patients and animals exposed to stress. Here, we examined the effect of chronic unpredictable stress (CUS) and chronic mild stress (CMS) on specific populations of neurons in the rat mPFC. Antibodies directed against parvalbumin (PV), calbindin D-28K (CB) and active caspase-3 have been used to quantify the numerical density of PV-immunoreactive (PV-ir), CB-ir and active caspase-3-ir cells, and to measure the relative optical density of neuropil. CUS decreased the density of CB-ir neurons and the optical density of CB-ir neuropil. In turn, CMS increased the densities of both CB-ir neurons and neuropil, while PV-ir neurons and PV-ir neuropil were not changed. The frequency distribution of neuronal surface areas was significantly different only for PV-ir neurons, and only between the control and CUS group. CMS reduced the density of active caspase-3-ir cells while CUS did not. We concluded that the mPFC reveals a different pattern of changes in neurons containing calcium binding proteins and active caspase-3 immunoreactivity in response to CUS and CMS.

Key words:

CUS, CMS, mPFC, parvalbumin, calbindin D-28K, caspase-3, immunohistochemistry
