

PW01-04 - ISOLATION-REARING DIFFERENTIALLY AFFECTS BDNF LEVELS IN PLASMA, HIPPOCAMPUS AND FRONTAL CORTEX OF NORMAL AND GENETICALLY DEPRESSED RATS

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Objectives: Changes in mature brain-derived neurotrophic factor (mBDNF) have been associated with the pathogenesis of depression. The present study employed isolation-rearing from weaning in normal Sprague Dawley (SD) and genetically depressed Flinders Sensitive Line (FSL), as a model of gene-environment interaction, to study mBDNF alterations in the plasma, hippocampus and frontal cortex (FC).

Methods: 21-28 days old male SD (n=8) and FSL (n=10) rats were housed in groups or in isolation for 39 days and sacrificed on the last day of housing. The hippocampus and FC were immediately dissected and the trunk blood collected for plasma separation. Pro-BDNF (36 kDa) and mBDNF (14 kDa) were detected in plasma using ELISA and in the hippocampus and FC using Western Blot. The mBDNF data were normalized to those of pro-BDNF to have an accurate index of changes in mBDNF production.

Results: I. Under basal conditions group-housed depressed FSL rats showed significantly ($p < 0.05$) higher mBDNF in plasma and lower in the hippocampus compared to normal SD rats. No differences were detected in the FC. II. Isolation-rearing in depressed FSL induced a decrease in mBDNF in plasma ($p < 0.05$) and an increase in the hippocampus ($p < 0.01$) compared to group-housed FSL, the FC was not affected. In contrast, isolation-rearing did not affect mBDNF in normal SD rats.

Conclusions: Isolation rearing differentially affected plasma and brain mBDNF only in depressed FSL rats, supporting the idea that gene-environment interaction is an important factor in determining specific changes in molecular correlates of depression.