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Anti-neuropeptide Y plasma immunoglobulins in relation to mood and appetite in depressive disorder

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Summary Depression and eating disorders are frequently associated, but the molecular pathways responsible for co-occurrence of altered mood, appetite and body weight are not yet fully understood. Neuropeptide Y (NPY) has potent antidepressant and orexigenic properties and low central NPY levels have been reported in major depression. In the present study, we hypothesized that in patients with major depression alteration of mood, appetite and body weight may be related to NPY-reactive autoantibodies (autoAbs). To test this hypothesis, we compared plasma levels and affinities of NPY-reactive autoAbs between patients with major depression and healthy controls. Then, to evaluate if changes of NPY autoAb properties can be causally related to altered mood and appetite, we developed central and peripheral passive transfer models of human autoAbs in mice and studied depressive-like behavior in forced-swim test and food intake. We found that plasma levels of NPY IgG autoAbs were lower in patients with moderate but not with mild depression correlating negatively with the Montgomery—Åsberg Depression Rating Scale scores and with immobility time of the forced-swim test in mice after peripheral injection of autoAbs. No significant differences in NPY IgG autoAb affinities between patients with depression and controls were found, but higher affinity of IgG autoAbs for NPY was associated with lower body mass index and prevented NPY-induced orexigenic response in mice after their central injection. These data suggest that changes of plasma levels of anti-NPY autoAbs are relevant to altered mood, while changes of their affinity may participate in altered appetite and body weight in patients with depressive disorder.

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