

Influence of repeated maternal deprivations on stress system development in CD1 mice  
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Maternal deprivation, the separation of mother and pups, has been proposed as an animal model to study the consequences of traumatic early life events, which are considered to increase susceptibility for psychiatric disorders in humans. From birth until postnatal day (pnd) 12, mice undergo a stress hypo-responsive period characterized by low basal corticosterone and an inability to induce ACTH and corticosterone secretion in response to mild stressors. We recently showed that maternal deprivation results in an activation of the pup's HPA axis already after 4 to 8 hours of maternal absence.

Here we investigated the immediate effects of a single (pnd 3), double (pnds 3 and 4) and triple (pnds 3, 4 and 5) 8 hours maternal deprivation(s) on the development of the stress system. The impact of these repeated deprivations is investigated at pnds 3, 4, 5 and 6, by measuring both peripheral and central markers of the HPA axis.

At pnd 3, 8 hours of maternal absence resulted in the expected increase in ACTH and corticosterone. In contrast to our expectations, each successive period of separation (at pnds 4 and 5), decreased the ACTH and corticosterone response to maternal deprivation. This indicates that repeated deprivations induce an increasingly stronger suppression of the peripheral part of the HPA axis. How this separation paradigm influences the expression of central markers of HPA axis is currently under investigation.

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