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Early maternal separation in mice triggers a specific immune response against commensal microbiota at adulthood

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Early stressful experience has been associated with irritable bowel syndrome (IBS) symptoms occurrence at adulthood. Using maternal separation (MS) as experimental model mimicking IBS, we aimed to evaluate the contribution of abnormal response to microbiota at adulthood in local micro-inflammation characterizing IBS.

MS increased IBS-like symptoms i.e. gut paracellular permeability to 4kDa Dextran-FITC and visceral sensitivity to colorectal distention in adult male C₃H/HeN mice. Furthermore, MS induced a significant (20%) decrease of total fecal immunoglobulin (Ig) A without modification of total plasmatic IgA. *Ex vivo* stimulation of splenocytes with a lysate of commensal *E. coli* isolated from C3H/HeN microbiota was performed. *E. coli* stimulation induced higher secretion of IFN γ (594 \pm 72 vs 357 \pm 72pg/ml; p<0.05) and lower secretion of IL10 (535 \pm 115 vs 278 \pm 100pg/ml; p<0.05) and IL17 (539 \pm 189 vs 289 \pm 159pg/ml; p<0.05) in MS mice compared to controls.

These data show that early life stressful events may impair host-microbiota relationship and trigger mucosal inflammation.