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THE CHANGES OF T REGULATORY CELLS IN THE THYMUS OF C57/BL MICE AFTER 28 D TAIL SUSPENSION

Abstract

Purpose: Spaceflight could compromise immune function, especially cellular immunity, including disturbed T cell subset distribution, Th2 shift, but the cellular and molecular mechanisms by which spaceflight alters human immune functions are poorly understood. T regulatory cells (Treg) are important in maintaining immune tolerance, as well as in regulating lymphocyte homeostasis, activation and function. The aim of this trial was to investigate the changes of Tregs in the thymus of C57/BL mice under simulated weightlessness, and explore mechanisms in which Tregs were regulated. Methodology: Total RNA was extracted from thymus of C57/BL mice after 28d suspension. RT-PCR were perfomed to determine Foxp3, TGF-β,miR-155 expression. Results: The results showed that after 28d tail suspension, the expression of Foxp3, which is the essential transcription factor of Tregs was reduced. The mRNA level of TGF-β, which is produced by Tregs, was down-regulated accordingly, which suggested the function of Tregs was inhibited. The expression of microRNA involved in the modulation of Tregs was also detected. miR-155 has been demonstrated to modulate Treg differentiation by targeting SOCS1. Its expression levels was also decreased.Conclusions: All of these data suggested that the reduced function of Tregs was perhaps responsible for the disturbance of immune system during spaceflight. Its mechanism need to be further explored.