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【タイトル】

Dectin-1 欠損マウスでは、腸内細菌組成の変化を介して肺の制御性 T 細胞が増加し、OVA 誘導気道炎症が抑制される。

【発表論文】

OVA-induced airway inflammation is ameliorated in Dectin-1–deficient mice, in which pulmonary Treg cells are expanded through modification of intestinal commensal bacteria

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【発表雑誌】:

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【研究の要旨】:

Asthma is an allergic chronic respiratory disease that affects more than 300 million people around the world. Dysbiosis of intestinal commensal microbiota influences the development of asthma. Dectin-1 (gene symbol: *Clec7a*), a C-type lectin receptor, plays an important role in the intestinal immune homeostasis by controlling regulatory T (Treg) cell differentiation through regulation of intestinal microbiota. However, it is not clear whether intestinal immune conditions affect immune responses in other organs. In this study, we examined the effects of Dectin-1 deficiency on allergic airway inflammation (AAI). OVA-induced AAI was attenuated in *Clec7a*$^{-/-}$ mice. Treg cells were more abundant in colonic lamina propria, mesenteric lymph nodes, and bronchoalveolar lavage fluid of *Clec7a*$^{-/-}$ mice after AAI induction. Treatment with antibiotics,

but not an antifungal agent, decreased the abundance of intestinal Treg cells and aggravated the symptoms of AAI in *Clec7a*$^{-/-}$ mice. Transplantation of gut microbiota from *Clec7a*$^{-/-}$ mice into antibiotic-treated hosts increased the abundance of intestinal Treg cells and ameliorated AAI. Over-colonization by *Lactobacillus murinus,* a Dectin-1 signaling regulated commensal bacterium, also promoted expansion of Treg cells in the colon and suppressed lung inflammation. Depletion of Treg cells with anti-CD25 antibody eliminated the phenotypic differences between WT and *Clec7a*$^{-/-}$ mice in OVA-induced AAI. These observations suggest that inhibition of Dectin-1 signaling ameliorates AAI by increasing the abundance of Treg cells in lungs through modification of intestinal commensal bacteria, suggesting a role for commensal microbiota in regulating inflammation in organs other than the intestine.