

## Characterization of lacrimal gland in male NOD mice associated with tear hyposalivation.

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Sjogren's syndrome (SS) is a disease that presents dry eye and mouth with chronic inflammation of exocrine glands, such as lacrimal gland (LG). The causal treatment of SS has not been established since the mechanism of exocrine secretion remains unclear. Non-obese diabetes (NOD) mice, which present a leukocytic infiltrate of exocrine glands, are used as SS model. Here, we investigated lacrimal hyposalivation in male NOD mice and characterized the LG. Male mice were used at ages 4, 6, and 10 weeks. In NOD mice, tear flow rate after pilocarpine treatment was decreased at ages 6 and 10 weeks, compared with age-matched control (BALB/c) mice. In addition, LG weight/body weight in NOD mice was increased as compared with that in control mice. On hematoxylin-eosin-stained LG sections in NOD mice, the inflammatory cells were observed from 6 weeks old, and the infiltration area was increased at 10 weeks old. By transcriptome (RNA-seq) analysis, expression changes of 827 genes in LG among samples were revealed. These results suggested that the onset of dacryoadenitis and lacrimal hyposalivation occur simultaneously. Furthermore, while identification of the responsible molecule must await further investigation, a large-scale change of gene expressions seems to underlie tear hyposalivation.