# Role of sulfated-glycans in nasal immune responses

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Mucosal lymphoid tissues such as Peyer's patches, tonsil, and NALT (Nasal-associated lymphoid tissues) function as a first line of immunological defense against invading pathogens. NALT contains various types of lymphoid cells that are required for the induction and regulation of mucosal immune responses to antigens delivered from the nasal cavity. However, molecular mechanisms underlying lymphocyte recruitment to NALT are still elusive. Immunohistochemical studies revealed that high endothelial venule (HEV) in NALT strongly expresses peripheral lymph node addressin (PNAd) bearing mucin-like domains that functions as scaffolding for sulfated *O*-glycans. In this study, we investigated the role of PNAd in lymphocyte recruitment to NALT using gene-targeting mice deficient in two sulfotransferases, GlcNAc6ST-1 and GlcNAc6ST-2, which are involved in PNAd biosynthesis. Short-term homing assay indicated that lymphocyte recruitment to NALT wassignificantly decreased by approximately 80% in DKO mice. Production of IgE and number of sneezes in response to nasally administered ovalbumin were also substantially diminished in the DKO mice.

These results demonstrate that the two sulfotransferases, GlcNAc6ST-1 and GlcNAc6ST-2, play an essential role in lymphocyte recruitment to NALT and nasal immune responses, suggesting a potential therapeutic approach to modulate allergic reactions by targeting sulfated glycan-mediated lymphocyte recruitment.