

CSN5 plays a role in asthma via its interaction with PD-L1

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April 28, 2023

Abstract

Background The COP9 signalosome (CSN) is a highly conserved protein complex composed of eight subunits. The individual CSN subunits play essential roles in cell proliferation, signal transduction modulation, gene transcription, angiogenesis, and microenvironmental homeostasis. However, the exact role of CSN subunit 5 (CSN5) in bronchial asthma remains unclear. **Methods** The potential link between CSN5 and bronchial asthma was investigated in ovalbumin (OVA)-induced asthma in mice. Samples from HMVEC-L cells treated with Dermatophagoides pteronyssinus (Derp1) and CSN5 small interfering RNA were collected to determine the expression of NF- κ B, I κ B α , IKK β , PD-L1, and CSN5. Furthermore, plasma CSN5 levels in asthma patients (stable and exacerbated states) were analyzed. **Results** Plasma CSN5 levels were higher in patients with exacerbated asthma (n = 19) than in healthy controls (n = 10) or patients with stable asthma (n = 10). The CSN5 level was correlated with lung function in patients with asthma. CSN5 silencing in HMVEC-L cells reduced the NF- κ B protein level at 4 h and PD-L1 level at 4 h, 8 h, and 24 h after *Derp1* treatment. Goblet cell hyperplasia, lung fibrosis, and the levels of CSN5, PD-L1, NF- κ B, p-I κ B α , p-IKK β , IL13, and INF γ proteins increased at 33 and 80 days in OVA-sensitized/challenged mice compared with control mice, but these changes were reduced by PD-L1 inhibitor treatment. **Conclusions** The results indicate that CSN5 interacts with PD-L1 in asthma and may be a potential target for asthma treatment.

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Figure 1.

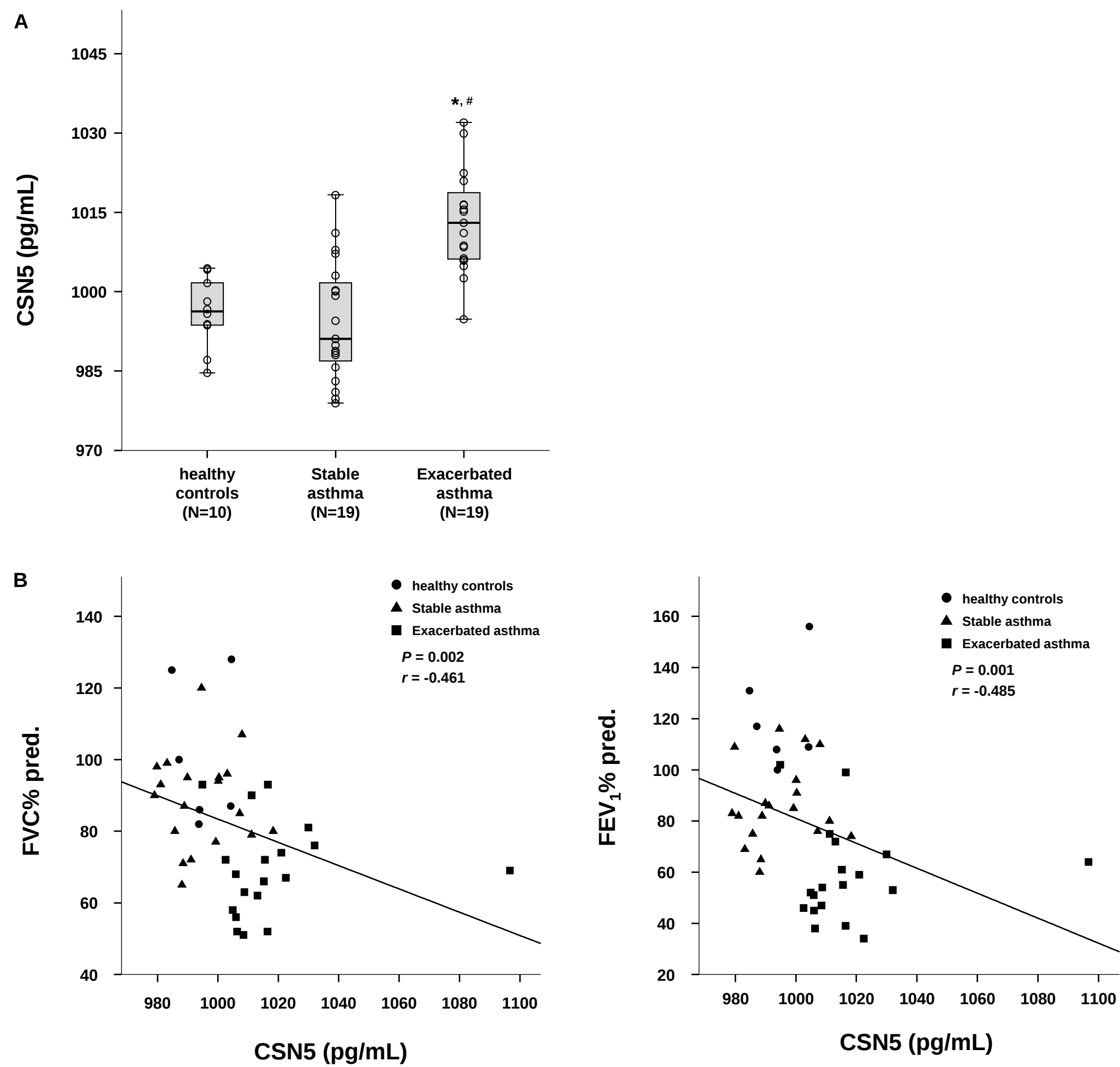


Figure 3.

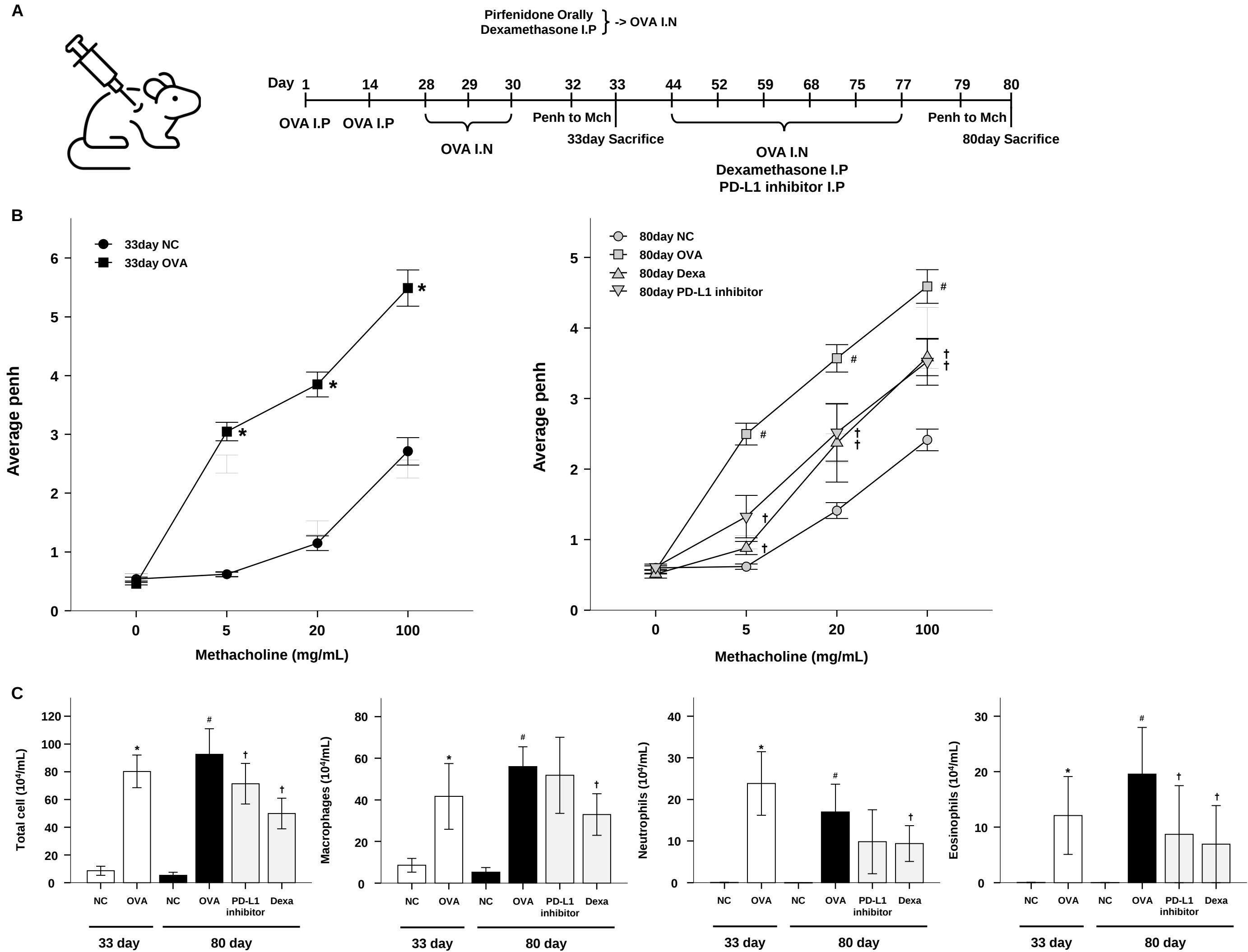


Figure 4.

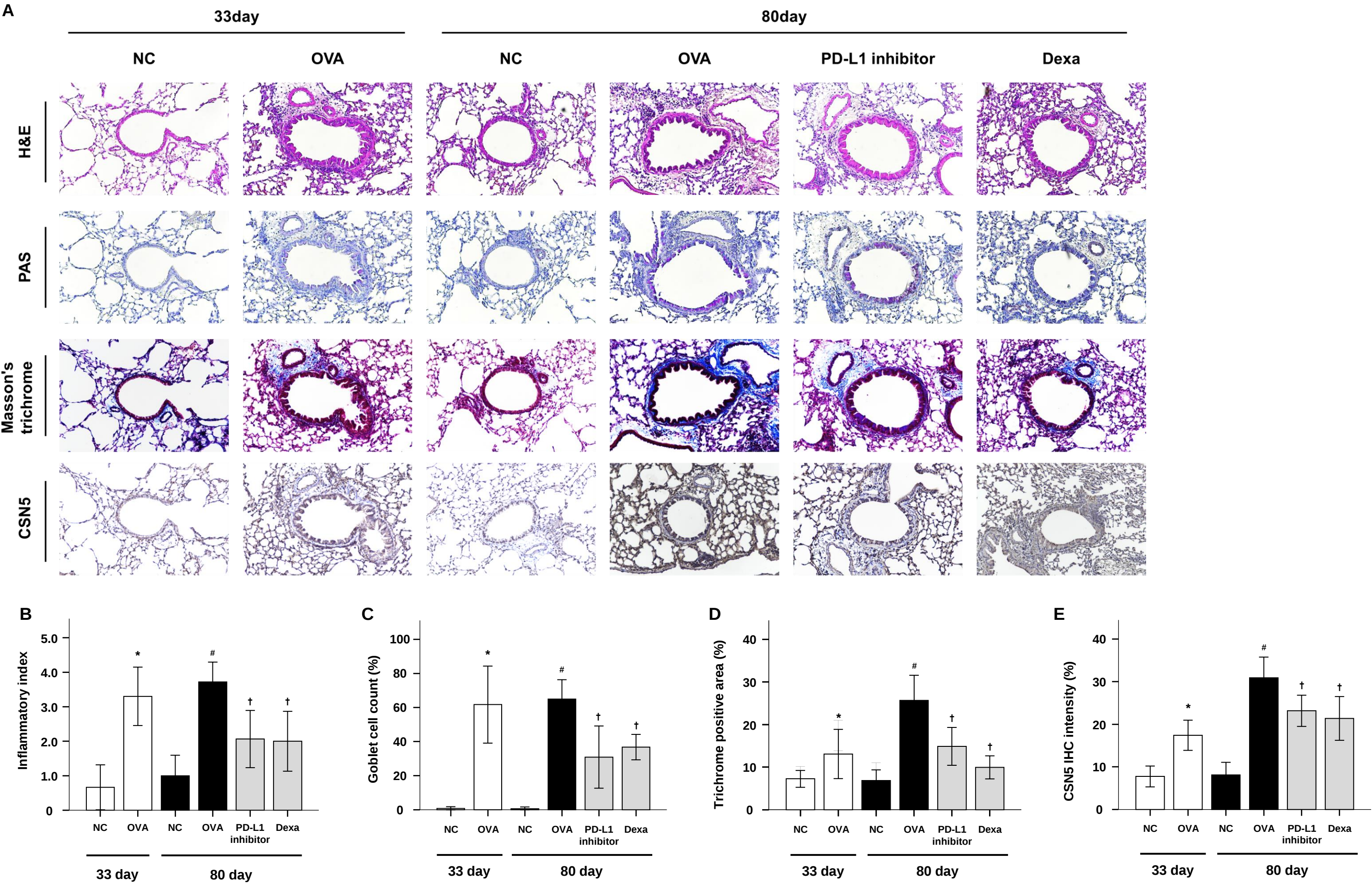


Figure 5.

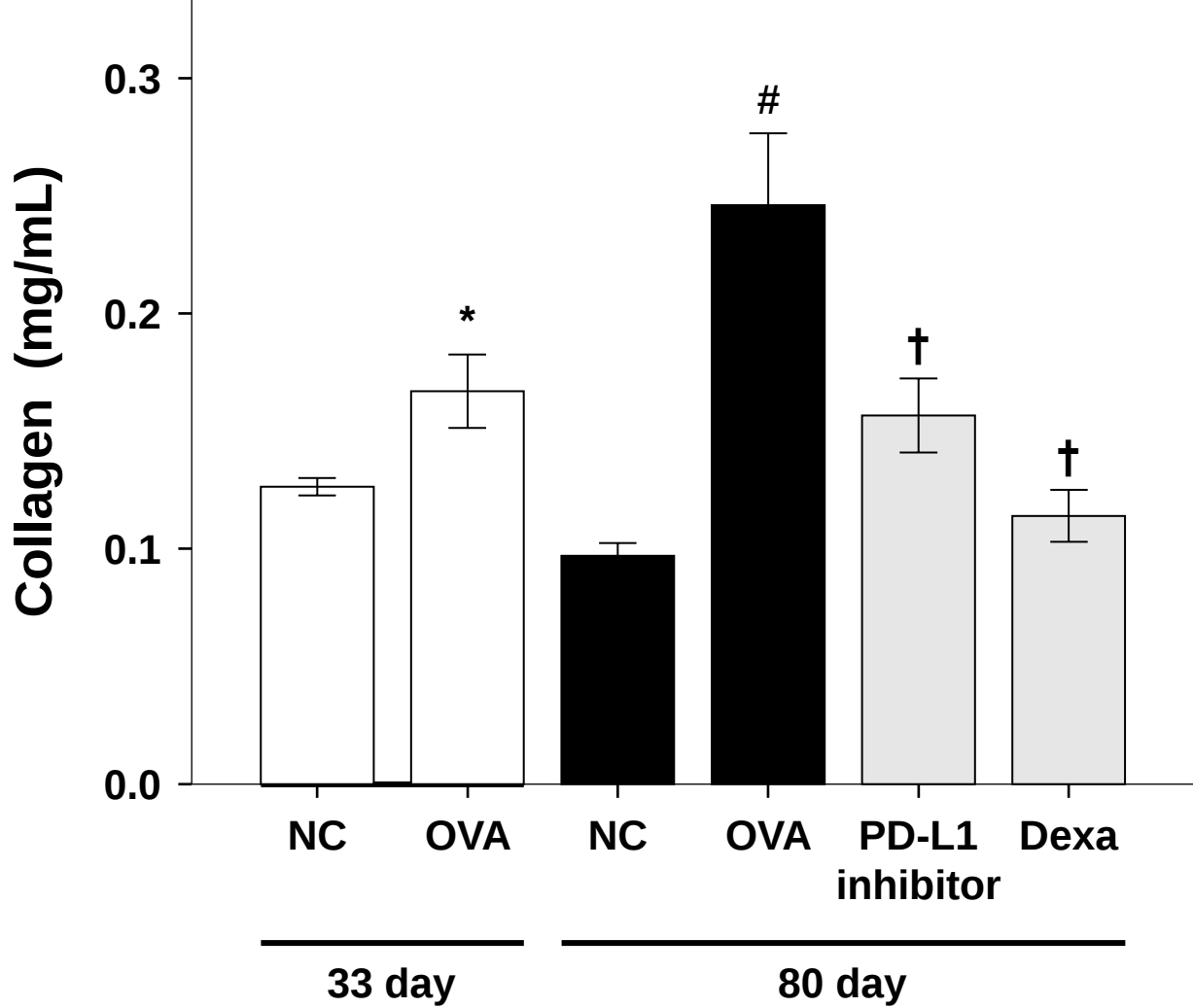


Figure 6.

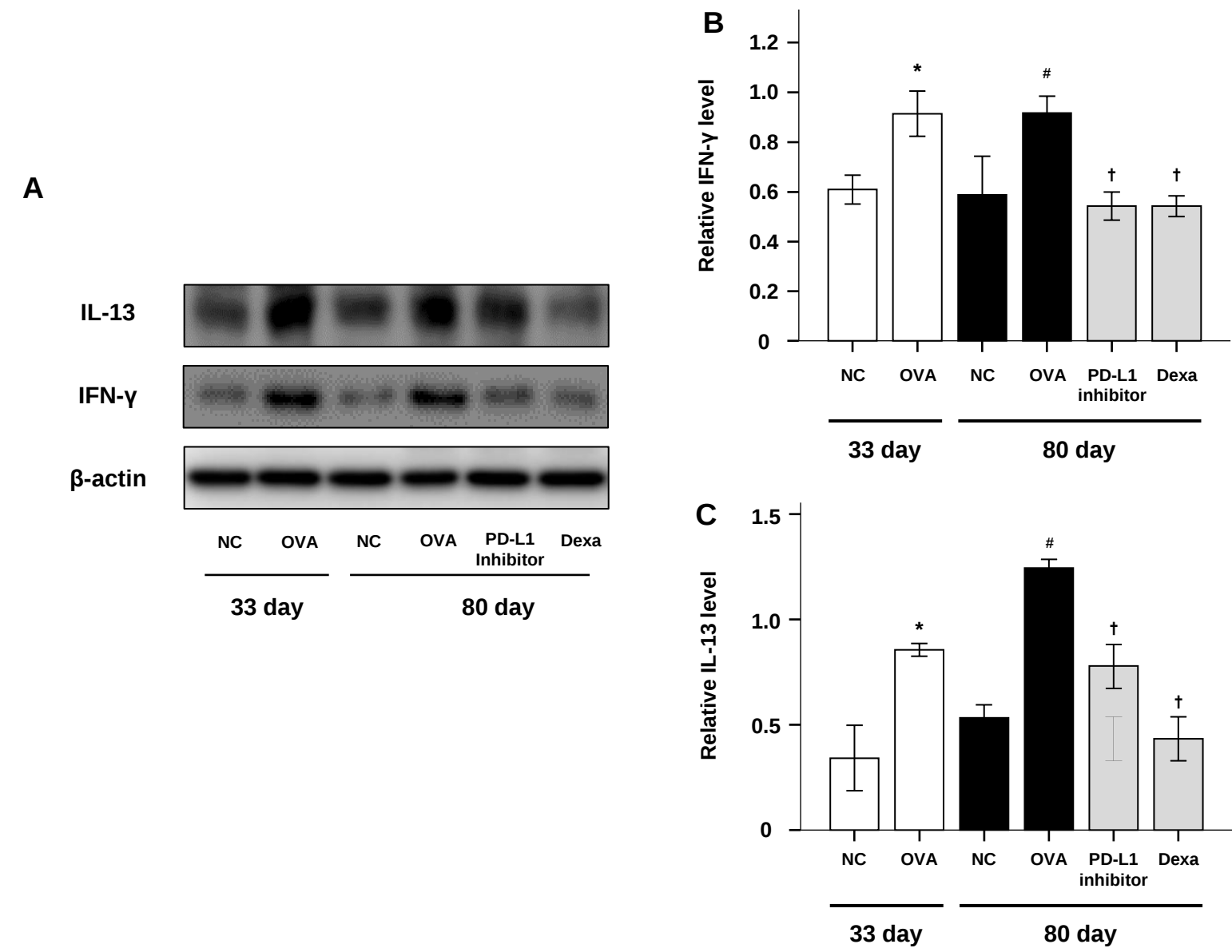


Figure 7.

