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Title: Thymosin β 4 protects mice from bleomycin-induced damage in the lung

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Body: Thymosin β 4 (T β 4) is a small ubiquitous protein that belongs to a family of highly conserved, bioactive molecules with considerable pleiotropic activities. We previously showed a protective role of T β 4 in the lung of C57BL/6 mice treated with bleomycin. Since it has been demonstrated that bleomycin-induced pulmonary fibrosis is dependent on IL-17 produced by T cells, in this research we investigated in CD mice the effects of T β 4 on lung damage and their correlation with the presence of IL-17 producing cells. Male CD mice were treated with bleomycin (BLEO, 1 mg/kg) in the absence or presence of T β 4 (6 mg/kg delivered intra-peritoneally on the day of BLEO treatment and for 2 additional doses). After sacrifice one week later, measurement of fluid and collagen content in the lung, BALF analysis, lung histology, evaluation of IL17 producing cells in blood and spleen as well as RT-PCR from lung tissue homogenates were performed. Moreover, we measured IL-17 levels in the serum of 25 idiopathic pulmonary fibrosis (IPF) patients and 10 matched controls by using ELISA. As expected, BLEO-induced inflammation and lung damage were substantially reduced by T β 4 treatment, as showed by the substantial reduction of edema, total collagen content, lung infiltration by leukocytes and histological evidence of the ongoing lung fibrosis. Importantly the bleomycin-induced increase in number of IL17 producing cells was significantly halted by T β 4. Even though considering a small group of patients, our data show no significant differences in IL-17 serum levels of PF patients compared to controls. This is the first report showing a T β 4 influence on IL17 producing cells correlating with its anti-inflammatory and anti-fibrotic effects.