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Title: Plant proteinase from Bauhinia bauhinioides Kallikrein inhibitor (BbKI) attenuates mechanics, inflammation and remodelling induced by elastase in mice

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Body: Proteinases plays a key role on emphysema development. This study evaluated the capacity of the plant proteinase inhibitor BbKI in the inactivation of elastase and its response modulator. Methods: C57Bl6 mice received elastase intratracheal or saline (Ve group). Afterwards, mice were treated with BbKI (2mg/kg) on days 1, 14, 21 after elastase instillation (I-E group) or saline instilation. On day 30 mice were anesthetized and mechanically ventilated and we analyzed respiratory system resistance (Rrs), elastance (Ers), tissue elastance (Htis), tissue damping (Gtis), airway resistance (Raw) and exhaled nitric oxide (ENO). Afterwards, bronchoalveolar lavage fluid (BALF) was performed and lungs were removed. By morphometry, we quantified the mean linear intercept (Lm), and the amount of collagen and elastic fibers in distal lung parenchyma. Results: In elastase group there was a significant increase in the Ers, Rrs, Raw, Htis, Lm, ENO, total and, macrophages, neutrophils and lymphocytes in BALF, and elastic and collagen fibres compared to controls ($p<0.05$). The BbKI treatment of elastase group decreased the Lm (59.33±4.74µm), Raw (0.33±0.05cmH2O/ml/s), Ers (36.83±5.73cmH2O/L), Rrs (0.843±0.19cmH2O/mL/s), Htis (37.360±6.2cmH2O/mL/s), total cells (69.25±20.98x104cells/mL), neutrophils (19.38±9.11x104cells/mL), lymphocytes (1.95±1.24x104cells/mL) in the BALF, ENO (19,66±8,33ppb) and elastic fibers content (30%±0.1%) compared to E-group ($p<0.05$). Conclusions: This proteinase inhibitor (BBKI) reduced elastase-induced pulmonary inflammatory and extracellular matrix remodeling alterations.
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