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Title: Plant proteinase from bauhinia bauhinioides kallikrein inhibitor (BbKI) attenuates inflammation and remodelling induced by elastase in mice

Dr. Edna A. 34230 Leick leick51@yahoo.com.br [1], Mr. Bruno 34231 Tadeu Martins Oliveira brunotad@gmail.com [1], Mr. Rafael 34232 Almeida-Reis dosreisrafael@gmail.com [1], Mr. Leandro 34233 Vilela Oliva leandrooliva@hotmail.com [1], Mr. Osmar A. 34234 Theodoro, Jr. osmartheodoro@ig.com.br [1], Prof. Dr Carla 34235 Máximo Prado cmprado@gmail.com [1,3], Prof. Dr Mílton A. 34236 Martins mmartins@usp.br MD [1], Prof. Dr Maria Luiza 34237 Vilela Oliva olivaml.bioq@epm.br [2] and Prof. Dr Iolanda F.L.C. 34238 Tibério iocalvo@uol.com.br MD [1]. [1] Department of Medicine, Faculty of Medicine - University of São Paulo, São Paulo, Brazil, 01246-903 ; [2] Department of Biochemistry, Universidade Federal De São Paulo, São Paulo, Brazil, 04044-020 and [3] Department of Biological Science, Universidade Federal De São Paulo, Diadema, São Paulo, Brazil, 09972-270 .

Body: Aims: To evaluate if a plant Kunitz proteinase inhibitor BbKI contributes to inactivation of elastase-induced inflammatory and extracellular matrix remodelling alterations. Methods: C57Bl6 mice received elastase intratracheal (50µl/animal group) 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. Afterwards, lungs were removed en bloc. By morphometry, we quantified the amount of neutrophils and positive cells for MMP-9, MMP-12 and MAC-2 in distal lung parenchyma. Results: In elastase group, there was a significant increase in neutrophils, MMP-9, MMP-12, TNF-α and MAC-2 compared to controls ($p<0.05$). The BbKI treatment of elastase group (I-E group) decreased the amount of neutrophils ($8.35\pm0.26/10^4\mu m^2$), the amount of the positive cells for MMP-9 ($10.82\pm0.75/10^4\mu m^2$), MMP-12 ($13.21\pm0.53/10^4\mu m^2$), TNF-α ($9.70.\pm0.35/10^4\mu m^2$) and for MAC-2 ($12.62\pm0.51/10^4\mu m^2$) compared to E-group ($p<0.05$). Conclusions: This proteinase inhibitor (BbKI) reduced elastase-induced pulmonary inflammatory and extracellular matrix remodeling alterations induced by elastase. Although more studies need to be performed, this inhibitor may contribute as potential therapeutic tool for COPD management. Financial Support: FAPESP, CNPq, LIM-20-HC-FMUSP.