

RESPIRATORY SYSTEM

Respiratory function in bronchoconstriction model

The longterm study of airway dysfunction remains essential for understanding the underlying mechanisms of disease and the development of new treatment options. Pulmonary function tests are useful to assess the physiological and pharmacological treatment of respiratory disorders. Bronchoconstriction model by methacholine challenge allows the experimental evaluation of lung function in mice in a comprehensive, precise and reproducible manner¹.

Test System: *Mus musculus* (Balb/c).

Number of animal per group: 8 animals.

Route of administration: upon request.

Treatment mode: upon request.

Main read-outs: Lung function measurements such as elastance, resistance and compliance by computer-controlled piston ventilator.

Validation Data

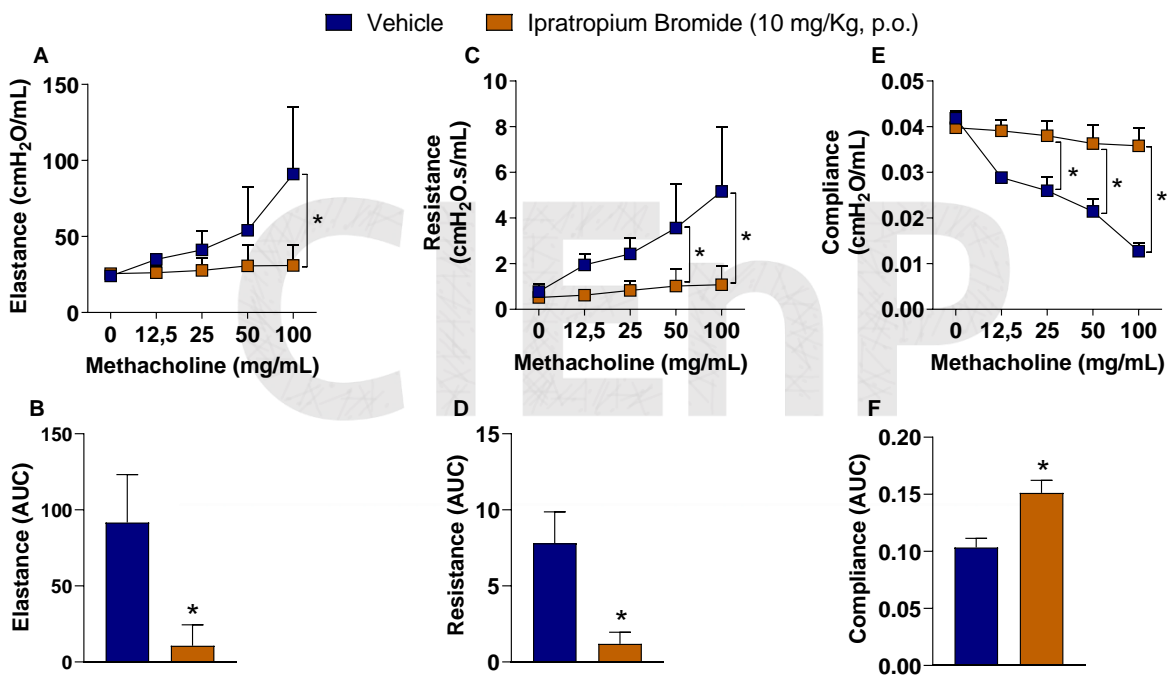


Figure 1. Changes in respiratory system mechanics following increasing methacholine challenges in mice. Effect of Ipratropium Bromide (10 mg/Kg, p.o.) in elastance, resistance and compliance in male and female mice. Ipratropium Bromide was administrated by 5 days and 1 hour before the analysis in the last day of treatment. Respiratory function was assessed using a computer-controlled piston ventilator (*flexiVent*; SCIREQ Inc.). Each point or column represents the mean \pm SEM of 6 mice per group. For statistical analyses was used two-way ANOVA followed by Bonferroni (A, C and E) and Student's *t*-test (B, D and F). * $p < 0.05$ ipratropium bromide group compared to vehicle group.

To avoid bias and to allow reproducibility all *in vivo* experiments follow the ARRIVE guidances². Mouse colony from Charles River Laboratories are breed and maintained in SPF conditions. The project includes study plan and final report. Raw data are inspected by quality assurance unity. The experimental procedures was previously approved by the CIEnP Committee on the Ethical Use of Animals.

References:

¹ McGovern TK, Robichaud A, Fereydoonzad L, Schuessler TF, Martin JG. Evaluation of respiratory system mechanics in mice using the forced oscillation technique. *J. Vis. Exp.* (75), e50172, 2013.

² Kilkeny C, Browne WJ, Cuthill IC, Emerson M, Altman DG. Animal research: reporting in vivo experiments: The ARRIVE guidelines. *PLoS Biol.* 8 (6): e1000412, 2010.