

RESPIRATORY SYSTEM

Expectorant model in mice

The long-term study of airway dysfunction remains essential for understanding the underlying mechanisms of the disease and the development of new treatment options. In some respiratory diseases including asthma, chronic bronchitis and other lung infections, altered balance between mucus production and clearance results on changes of the viscosity, hydration or ciliary function, causing discomfort and inducing coughing. Expectorant activity model by phenol red allows to estimate the secretory capacity of the airway mucosa in a comparative way with positive controls, such as Ambroxol¹.

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

Number of animal per group: 8 animals.

Route of administration: upon request.

Treatment mode: upon request.

Reference Item: Ambroxol (100 mg/Kg p.o.)

Main read-outs: Quantification of phenol red in bronchoalveolar lavage fluid.

Validation Data

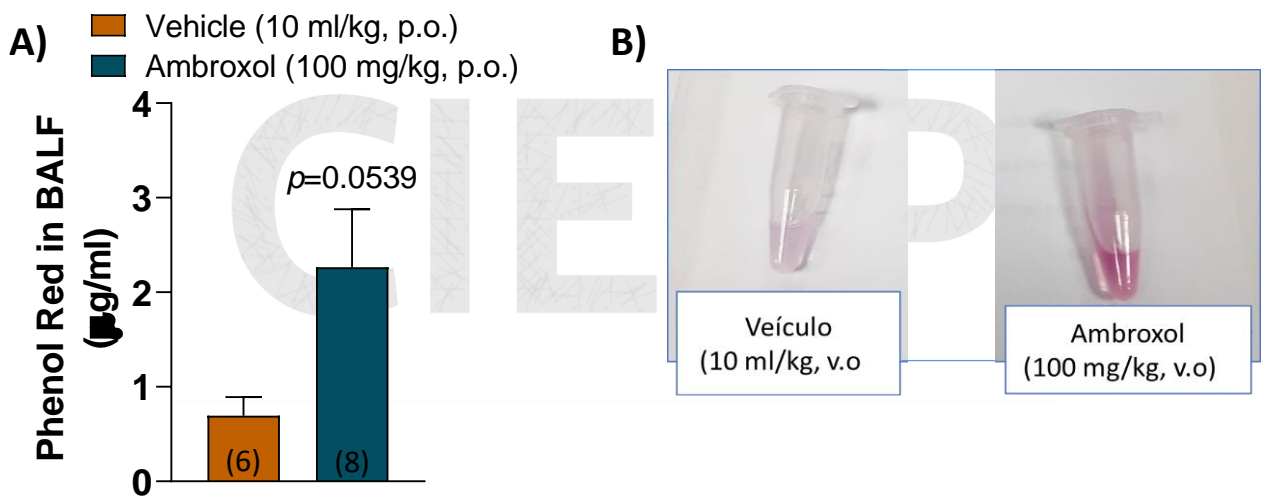


Figure 1. Evaluation of the expectorant activity of Ambroxol (100 mg/Kg, p.o) in male and female mice. Ambroxol or vehicle (10 mL/Kg, p.o.) was administrated by 5 days. On the last day, phenol red (500 mg/Kg, i.p.) was administered 1 hour before the treatments. Thirty minutes after phenol red injection, bronchoalveolar lavage fluid harvesting was performed. Quantitative (A) and qualitative (B) analysis of phenol red in BALF. Data were expressed as mean \pm SEM. The numbers in parentheses indicate the number of animals in each experimental group. For statistical analyses was used Student's *t*-test. $p = 0.0539$ ambroxol 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 Menezes, PMN, Brito MC, Sá PGS, Ribeiro LAA. et al. Analytical and pharmacological validation of the quantification of phenol red in a mouse model: Na optimized method to evaluate expectorant drugs. *J Pharmacol Toxicol Methods*, 98, p. 106586, May 2019.

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.