

## Evaluation of the anti-histaminic effects of two new diphenhydramine derivatives, using guinea-pig ileum model

A. Ardeshiri lajimi<sup>1,\*</sup>, P. Boluki naseri<sup>1</sup>, M. Faizi<sup>1</sup>, A. Ahmadi<sup>2</sup>, N. Naderi<sup>1</sup>

<sup>1</sup>Department of Pharmacology and Toxicology, School of Pharmacy, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>2</sup>Islamic Azad University Karaj branch, Karaj, Iran

**Background and Aims:** Anti-histaminic drugs are vastly used to decrease allergic symptoms. Nevertheless, due to their numerous side effects, such as anti cholinergic effects, drowsiness, and effects on blood vessels, searching for novel drugs that have less side effects, has been always a topic of interest to the medical researchers. The purpose of this investigation is to analyze the anti-histaminic effects of two new derivatives of diphenhydramine (2-((4-bromophenyl)(phenyl)methoxy)-N,N-dimethylethanamine and 4-(2-(dip-tolylmethoxy) ethyl)morpholine) using isolated guinea-pig ileum model.

**Methods:** The animal was anesthetized by isoflurane; then the ileum was removed and put in a chamber pre-filled with 37°C tyrode solution which was bubbled by oxygen. The tissue was attached to isometric transducer and put under tension (1 g) and the function of the compounds to prevent histamine-induced contraction of ileum was evaluated.

**Results:** Cumulative doses of histamine produce dose-dependent contraction of ileum muscle and consequently decrease its length. The effect of histamine was entirely blocked when a low density of the prototype antihistaminic agent chlorpheniramine (10  $\mu$ M) was applied. Administration of various concentrations of bromodiphenhydramine (at the range of 0.1 – 10  $\mu$ M) showed antihistaminic effect by shifting the dose-response curve of histamine effect to the right. Also, application of various doses of non-bromo derivative of diphenhydramine at the range of 1 – 1000  $\mu$ M could shift the dose-dependent effect of histamine to the right.

**Conclusions:** The results of the present study shows the anti-histaminic effect of the two novel derivatives of diphenhydramine. Moreover, the effect of bromo derivative of diphenhydramine is comparable with the prototype antihistaminic agent chlorpheniramine. Furthermore, the results indicate that the compound with no bromine moiety in its chemical structure produced less antihistaminic activity compared to chlorpheniramine. More experiments are required to better understanding the pharmacology profile of these new compounds.

**Keywords:** Antihistamine; Ileum; Diphenhydramine derivative; Guinea pig