Background/Introduction: The aim of experiments was to investigate the effect of a naturally occurring polyphenol morin on the sensitivity of airway defence mechanism (bronchial contraction, cough reflex and ciliary beat frequency) and inflammation in the setting of experimentally induced allergic asthma.

Methods: Using an experimental model of allergic asthma, we evaluated the anti-asthmatic potential of morin either after acute administration or after long-term (21 days) treatment of ovalbumin (OVA) sensitized guinea pigs. In light of this fact, we measured the following parameters: the specific airway resistance (sRaw) to histamine, the sensitivity of a chemically induced cough reflex via an in vivo method; the ciliary beat frequency (CBF) by in vitro method; the concentrations of the inflammatory cytokines interleukin IL-4, IL-5, IL-13 in bronchoalveolar lavage fluid (BALF).

Results: Acute morin (30 mg p.o.) administration had a comparable antitussive efficiency with codeine (10mg/kg, p.o.), but did not elicit a significant decline in sRaw parameters. Its acute bronchodilatory efficiency did not reach the effect of beta2 agonist salbutamol (4mM by inhalation). Long-term administration of morin (30mg/kg/day) resulted in significant cough suppression, which was by 20% higher in comparison with codeine effect. The bronchodilatory efficiency of morin defined by sRaw values was by 34% higher as an effect of long-acting beta2 agonist salmeterol (0,17mM/day by inhalation). The 21 days treatment of OVA-sensitized guinea pigs with morin reduced the levels of IL-4 and IL-13 in the BALF. This efficiency was comparable with the effect of reference drug, anti-inflammatory acting glucocorticoid budesonide (1mM/day by inhalation). The acute and long-term morin administration had not negative efficiency on CBF as an important parameter of mucociliary clearance.

Discussion/Evaluation: Our experimental results were indicative of significant bronchodilatory, antitussive and anti-inflammatory effects exerted by morin chronic therapy.

Conclusion: Presented data confirmed polyphenol morin as a promising target for treatment of respiratory diseases associated with allergic inflammation.

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