

Influence of epithelium and isoprenaline incubation on responsiveness of guinea-pig trachea to methacholine

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Abstract: There are reports regarding harmful effect of long-term use of beta(β)-agonist drugs on asthma severity and airway responsiveness. In the present study, the responses of guinea pig trachea with intact and denuded epithelium (groups ١ and ٢, $n = ١٠$) to methacholine as EC_{50} were measured in tissues nonincubated or incubated with $١٠ \mu\text{mol/l}$ isoprenaline during the resting period. The same protocol was performed in groups ٣ and ٤ ($n = ٥$ for each group) with an additional ٣٠ min rest time after isoprenaline incubation. The response of trachea with denuded epithelium (groups ٣ and ٤) to methacholine was significantly higher than that with intact epithelium both in incubated and nonincubated conditions (groups ١ and ٣, $p < ٠,٠٥$ to $p < ٠,٠٠١$). Incubation with isoprenaline caused a significant reduction in the tracheal response to methacholine in both the denuded groups ($p < ٠,٠٠٥$ and $p < ٠,٠٠١$) and intact epithelium groups ($p < ٠,٠٠٥$ for both cases). The reduction in tracheal responsiveness to methacholine due to incubation in epithelium denuded trachea (groups ٣ and ٤) was nonsignificantly greater than that of intact epithelium tissues. There was no difference between groups ٣ and ٤ with those of groups ١ and ٢ in both incubated and non incubated conditions. The maximum contractility response to methacholine was not different between tracheal chains with denuded and intact epithelium and did not change due to incubation with isoprenaline. The results of this study indicate reduction of tracheal response to methacholine due to incubation of tissues with isoprenaline, which was relatively more pronounced in epithelium denuded trachea. Copyright (C) ٢٠٠٦ S. Karger AG, Basel.

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