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# Effects of Antihistamines on Leukotriene and Cytokine Release from Dispersed Nasal Polyp Cells

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and Clinic for Otolaryngology, Dresden University of Technology<sup>c</sup>, Dresden (Germany)

## Summary

In this study the effects of antihistamines on the release of eicosanoids and the pro-inflammatory cytokine tumor necrosis factor alpha (TNF $\alpha$ ) were compared. Enzymatically dispersed cells from human nasal polyps served as an in vitro model of chronic respiratory mucosal inflammation. Nasal polyp cells ( $2 \times 10^6$ /ml) were sensitized with human IgE preincubated with azelastine (CAS 58581-89-8), terfenadine (CAS 50679-08-8), levocabastine (CAS 79516-68-0) or cetirizine (CAS 83881-51-0), and stimulated with anti-human immunoglobulin E (IgE). Thromboxane B<sub>2</sub> (TBX<sub>2</sub>) and leukotriene C<sub>4</sub> (LTC<sub>4</sub>) were measured by radioimmunoassay (RIA), TNF $\alpha$  by enzyme-linked immunosorbent assay (ELISA). Data represent mean values of % inhibition estimated from the untreated positive

control or mean IC<sub>50</sub> (n = 5). Azelastine and terfenadine inhibited TNF $\alpha$  release with IC<sub>50</sub> values of 6.2  $\mu$ mol/l and 4.3  $\mu$ mol/l, respectively. Terfenadine reduced TXB<sub>2</sub> release by  $37 \pm 15$  %, and LTC<sub>4</sub> release was decreased by azelastine and terfenadine very potently by 86 % and 100 %, respectively. Azelastine shows anti-inflammatory properties in therapeutically relevant concentrations as assessed by its ability to reduce TNF $\alpha$  release as well as its ability to inhibit LTC<sub>4</sub> production in allergically stimulated human nasal polyp cells.

## Zusammenfassung

Wirkung von Antihistaminika auf die Freisetzung von Leukotrienen und Cytokinen aus dispergierten Zellen nasaler Polypen

In der vorliegenden Studie wurde die Wirkung von Antihistaminika auf die Freisetzung von Eicosanoiden und des

entzündungsfördernden Cytokins „Tumor necrosis factor“  $\alpha$  (TNF $\alpha$ ) untersucht. Enzymatisch dispergierte Zellen von menschlichen nasalen Polypen dienen als In-vitro-Modell der chronischen mukosalen Entzündung der Atemwege. Diese Zellen ( $2 \times 10^6$ /ml) wurden mit

## Key words

- Azelastine
- Cetirizine
- Leukotriene
- Levocabastine
- Nasal polyps, human
- Terfenadine
- Tumor necrosis factor  $\alpha$

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