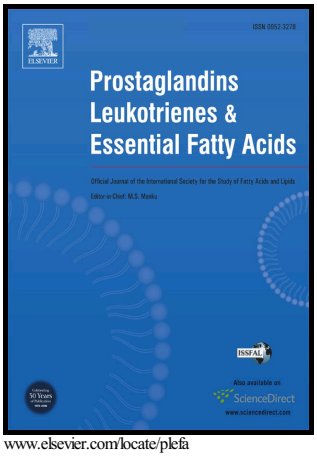

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PII: S0952-3278(17)30145-X
DOI: http://dx.doi.org/10.1016/j.plefa.2017.09.009
Reference: YPLEF1873

To appear in: *Prostaglandins Leukotrienes and Essential Fatty Acids*

Received date: 11 June 2017
Revised date: 12 August 2017
Accepted date: 12 September 2017

Cite this article as: Jintao Du, Luo Ba, Jiao Zhou, Lingyu Yu, Ruowu Liu, Jie Zhang, Feng Liu, Junming Xian, Shixi Liu and Yafeng Liu, The role of cysteinyl leukotrienes and their receptors in refractory nasal polyps, *Prostaglandins Leukotrienes and Essential Fatty Acids,* http://dx.doi.org/10.1016/j.plefa.2017.09.009

The role of cysteinyl leukotrienes and their receptors in refractory nasal polyps

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Abstract

Leukotriene signaling is essential in many diseases, including asthma, allergic rhinitis, atherosclerosis and inflammatory bowel disease. Nevertheless, the expression of cysteinyl leukotrienes (CysLTs) and its receptors (CYSLTRs) in different types of nasal polyps (NPs), and the role of their antagonist in the treatment of refractory chronic rhinosinusitis with nasal polyps (CRSwNP) are not well understood. The following study investigates the expression of CysLTs and CYSLTRs in different types of NPs, as well as the role of leukotriene receptor antagonist (montelukast) in refractory NPs. Our data showed that CysLTs and CYSLTRs were significantly elevated in CRSwNP group ($p < 0.05$), particularly in IL-5^{+}NP patients, compared to patients with chronic rhinosinusitis but without NPs (CRSsNP) and the control group. Furthermore, montelukast have shown the ability to inhibit the expression of MUC5AC, TSLP, IL-4, IL-5, IL-13, and TGF-β in NP explants after treatment with Staphylococcal Enterotoxins B (SEB). In addition, the patients treated by additional montelukast have better outcomes compared to those with INCS only. To conclude, our results demonstrate that the inhibition of CysLTs signaling by montelukast decreases the expression of cytokines and mucin in polyp explants, and in turn promotes the recovery in patients with refractory CRSwNP.

Keywords: chronic rhinosinusitis with nasal polyps; cysteinyl leukotriene; type 1 cysteinyl leukotriene receptors; leukotriene receptor antagonist; functional endoscopic sinus surgery

Abbreviation: CRSw/sNP, chronic rhinosinusitis with/without nasal polyp; IL, interleukin; KCN, key cytokines negative; CysLT, cysteinyl leukotriene; CYSLTR, cysteinyl leukotriene receptor; LTRA, leukotriene receptor antagonist; FESS, functional endoscopic sinus surgery; TNSS, total nose syndrome score; INCS, intranasal corticosteroid; SEB, Staphylococcal Enterotoxins B.

[1] Jintao Du and Luo Ba contributed equally to this work.