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Rhinovirus-induced airway remodeling is modulated by curcumin and is NF- κ B dependent

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The aim of the present study was to evaluate the effect of curcumin on expression of the genes involved in the remodeling process in the context Rhinovirus infection. To achieve this, two lines of fibroblasts (WI-38 and HFL1) were treated with rhinovirus 2 and 16 and curcumin, and expression of the genes involved in remodeling process (MMP-9, TGF- β , CHI3L and ADAM33) was evaluated by qPCR and Western Blot. Moreover, NF- κ B were silenced utilizing siRNA. Both rhinoviruses induced expression of the genes evaluated: HRV16 caused stronger effect than HRV2, respectively: RQ for MMP-9=13 vs.12, TGF- β =7.6 vs. 7.2, CHI3L=3.4 vs. 3.2, ADAM33=4.8 vs. 4.6 ($p<0.05$). Curcumin significantly decreased MMP-9 and TGF- β expression (RQ=0.55 and 0.6 respectively, $p<0.05$). Importantly, curcumin significantly decreased Rhinovirus-induced expression of MMP-9 and TGF- β (RQ=8 for both HRV16 and HRV2, and RQ=5.3 for HRV16 and 5.1 for HRV2, respectively, $p<0.05$).

NF- κ B siRNA revealed plays important role in remodeling-associated genes and curcumin action – the expression of each gene was lower when NF- κ B was silenced ($p<0.05$).

Curcumin influence airway remodeling by changing the expression of the genes involved in this process. HRV infections upregulate a number of airway inflammatory and remodeling mediators that are implicated in the pathogenesis of airway inflammation and remodeling in asthma. These processes are dependent on Nf- κ B. Our results show that remodeling is a mechanism which might be influenced/inhibited by some agents, and this subject demands further study.

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Biography

Joanna Wieczfinska has completed his PhD at the age of 28 years from Medical University of Lodz, Poland. She is a member of many international societies, connected with immunology, asthma, and other lung disease. She has published 23 papers in reputed journals and has been serving as a reviewer in many journals.

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