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Impact of $\beta^{2,2}$ -amino acids, a novel class of *Chlamydia pneumoniae* inhibitors, on bronchial epithelium VEGF production

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The obligate intracellular bacterium *Chlamydia pneumoniae* is a ubiquitous human pathogen responsible for 5-10% of community-acquired pneumoniae cases and a variety of milder upper and lower respiratory tract infections. Owing to its propensity to persistence, *C. pneumoniae* infections are associated with treatment failures, and the presence of the bacterium in the respiratory tract has been shown to induce the production of various proinflammatory cytokines and growth factors like vascular endothelial growth factor VEGF. The chronic inflammation induced by *C. pneumoniae* links the bacterium to asthma and other inflammatory diseases. We have recently described the ability of amphipathic $\beta^{2,2}$ -amino acid derivatives, developed from cationic antimicrobial peptides, to target *C. pneumoniae* on both in intracellular and extracellular forms of the bacterium, indicating that the eradication effect of these agents on *C. pneumoniae* is not dependent on its replication. In the current work, we report on the ability of the $\beta^{2,2}$ -amino acid derivatives to suppress VEGF production induced by *C. pneumoniae* in bronchial epithelial cells. According to our data, the *C. pneumoniae* clinical isolate K7 induced significant VEGF production in BEAS-2B cells, and both studied $\beta^{2,2}$ -amino acid derivatives A1 and A2 suppressed the VEGF production at concentrations 5 μ M and below. The derivatives were more effective in this respect than azithromycin, a gold standard for treating chlamydial infections. Regarding the known role of VEGF in the pathophysiology of asthma and related diseases, these results illustrate the potential of these non-conventional antichlamydial agents in suppressing *C. pneumoniae* and the infection consequences in bronchial epithelium.

Biography

Hanski L has completed her PhD in 2010 from University of Helsinki and Docentship in Pharmaceutical Biology from Åbo Akademi University (Turku, Finland) in 2013. She is the chief researcher of Chlamydia research team and acts as the university lecturer responsible for teaching in Pharmaceutical Microbiology in Faculty of Pharmacy, University of Helsinki. The main focus of her research is in the therapy approaches on *C. pneumoniae* and RNA viruses and has published 25 scientific papers, including four invited reviews.

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