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Natural Product Drug Discovery for a Worldwide Pathogen, the Intracellular Bacterium *Chlamydia pneumoniae*

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Chlamydia pneumoniae is a common bacterium causing respiratory tract infections worldwide. Usually the outcome is mild upper respiratory tract infection but also pneumonia is detected. Persistent *C. pneumoniae* infection has been connected to different chronic lung diseases such as asthma, chronic obstructive pulmonary disease and even lung cancer. The most surprising finding, however, has been the association between *C. pneumoniae* infection and cardiovascular diseases.

Like viruses, chlamydia bacteria need a host cell in which the proliferation takes place, and normally the bacterium has two distinctive developmental forms, extracellular (elementary body) and intracellular (reticulate body). We screened over 100 natural or naturally derived compounds and 96 extracts in *in vitro* cell cultures infected by *C. pneumonia* [1, 2]. 30% of the compounds and 34% of the extracts were found active against *C. pneumoniae*. Of these, three highly active compounds and one extract were chosen for *in vivo* animal studies: octylgallate, luteolin and quercetin and a plant extract [3]. The effect of these substances on acute *C. pneumoniae* lung infection was tested using mouse as the animal model. The aim was to find out whether the compounds could reduce lung inflammation and shorten the duration of the disease or even prevent the infection. In addition, the effect of these compounds on different inflammatory markers and on the function of the aortic wall was studied. The substances showed different profiles in the animal studies. Our findings are preliminary results on the possible beneficial effects of the substances on *C. pneumoniae* infection, and their further exploration will be discussed [4].

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