TITLE: SELECTION OF EPITOPES THAT MIMIC THE *CHLAMYDIA PNEUMONIAE* SELECTED BY PHAGE DISPLAY AS NOVEL DIAGNOSTIC TOOLS

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Chlamydia pneumoniae is responsible for chronic pharyngitis, acute, chronic and recurrent middle ear infections, sinusitis, and infections whose course is similar to sinobronchial syndrome. New assays for detection of specific antibodies to *C. pneumoniae* are necessary to improve diagnosis and seroepidemiological information. Phage display is a powerful methodology to find new targets to be used in immunoassays. Our goal was to obtain specific peptide ligands to IgG that mimic *C. pneumoniae* epitopes. IgG from infected persons with *C. pneumoniae* and negative controls were covalently coupled to protein G-magnetic beads, washed and incubated with a PhD-12 library of random hepta-peptides expressed at the amino terminal of pIII coat protein of the filamentous bacteriophage M13, which has a diversity of 10^9 peptides (New England BioLabs, Inc) for biopanning. After selection, 96 clones were tested in ELISA assays, and highly reactive clones had their DNA sequenced and translated. Additional immunoassays were performed for those clones with valid sequences, and showed significant differences between patients and controls. We have further performed an *in silico* analysis and found relevant linear and structural alignments to bacterial epitope. Previously unknown conformational and linear epitopes of high affinity monoclonal and polyclonal antibodies have been successfully identified. Selection of mimotopes present an improvement in *C. pneumoniae* diagnosis and epidemiological surveillance.

Keywords: *Chlamydia pneumoniae*, Phage Display, Diagnostic.

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