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Changes of intracellular calcium after administration of pathogenic mycoplasma in porcine ciliated tracheal cells

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Mycoplasma pneumonia of swine, caused by *Mycoplasma hyopneumoniae*, is an economically important swine disease. The role of *M. hyopneumoniae*infection in association with other swine respiratory pathogens has gained increased importance. However, the mechanisms underlying *M. hyopneumoniae*-induced ciliary damage or loss of cilia are not well-understood. A pathogenic *M. hyopneumoniae* strain 91-3, originally cloned from strain 232, shows high adherence to cilia. A non-pathogenic *M. hyopneumoniae* J, originated from ATCC strain 25934, which does not adhere to cilia. *M. flocculare* strain Ms42, originated from ATCC strain 27399, is a non-pathogen in swine. These mycoplasmas were collected and suspended with 50 ml phosphate buffer saline (PBS)

The $[Ca^{2+}]_i$ in the ciliated cell increased (to) 250±19 nM (47 cells in 10 experiments) after administration of pathogenic *M. hyopneumoniae* strain 91-3 (300 ㎍/㎖). The induced $[Ca^{2+}]_i$ was varied from cell (206 nM) to cell (308 nM). However, non-pathogenic *M. hyopneumoniae* (300 ㎍/㎖) and *M. flocculare* (300 ㎍/㎖) did not significantly increase [Ca2+]i (8±2 nM, 18 cells in 6 experiments and 2±2 nM, 24 cells in 8 experiments) in the selected tracheal cells. This indicates that the ciliated tracheal epithelial cells may have specific receptors to the pathogenic *M hyopneumoniae* starin 91-3, but not to the non-pathogenic *M. hyopneumoniae* and *M flocculare*.

Keyword : *Mycoplasma hyopneumoniae* , Calcium, Trachea, Epithelial cell