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Differential Production of Proinflammatory Cytokines Following Co-infection with *Mycoplasma hyorhinis* and Porcine Reproductive and Respiratory Virus

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Introduction: Mycoplasmas are small, ubiquitous bacteria without a rigid cell wall existing as commensals and pathogens of animals. In our previous work, one field strain of *M. hyorhinis* was found to potentiate PRRSV-induced pneumonia as well as *M. hyopneumoniae*. Transcriptional profile of proinflammatory cytokines induced by infection of *M. hyorhinis* and PRRSV was investigated using *in vitro* porcine pulmonary alveolar macrophages (PAMs) culture.

Materials and methods: 5×10^5 PAMs were infected with *M. hyorhinis* field strain or PRRSV strain LMY, respectively. Same numbers of the other PAMs were infected with both microbes. 24h after inoculation, PAMs of each groups were collected and total RNA was isolated from them. Quantitative reverse transcription real-time PCR was used to measure transcription levels of the interleukin (IL) 1α, IL1β, IL6, IL8, IL10, IL12 p35, IL12 p40, tumor necrosis factor (TNF) α, transforming growth factor (TGF) β1, TGFβ2 genes in PAMs.

Results: Both *M. hyorhinis* alone and PRRSV alone infected groups tended to have increased transcription levels of the IL1α, IL1β, IL10, IL12 p35, IL12 p40, TGFβ2 genes, while the IL6, TNFα and TGFβ1 genes showed decreased transcription levels. In dual infected PAMs, mRNA levels of the IL1α, IL1β, IL8, IL12 p35, TNFα, TGFβ2 genes was increased, but that of the IL10 and IL12 p40 was decreased. Especially transcription level of the TGFβ2 gene in the dual infected group was considerably increased than those of other groups.

Conclusion: The differential production of proinflammatory cytokines between dual infected group and *M. hyorhinis* and PRRSV infected alone groups suggested that cytokine-induced inflammation might play an important role in the severe, chronic pneumonia caused by concurrent infection of the two pathogens.

References

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