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# Proteomic analysis of macrophage in response to *Edwardsiella tarda*-infection

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## ABSTRACT

*Edwardsiella tarda* is an important facultative intracellular pathogen infecting a wide range of host from fish to humans. This bacterium could survive and replicate in macrophages as an escape mechanism from the host defense. *E. tarda*-macrophage interaction is vital in determining the outcome of edwardsiellasis. To fully elucidate the pathogenesis of *E. tarda*, the differential proteomes of RAW264.7 cells in response to *E. tarda*-infection, were analyzed at different time points with two-dimensional gel electrophoresis (2-DE) followed by liquid-chromatography-tandem mass spectrometry (LC-MS/MS) identification. 26 altered proteins (18 up-regulated and 8 down-regulated proteins) were successfully identified, which are mainly involved in formation of phagosomes, macrophage microbicidal activity and anti-apoptosis of macrophage. Moreover, 6 corresponding genes of the differentially expressed proteins were quantified by quantitative real-time PCR (qPCR) to examine the transcriptional profiles. Western blot analysis further confirmed the differential expression of 5 proteins in the proteomic profiles. Based on these findings, we hypothesize that these differentially expressed proteins likely play a pivotal role in determining the course of *E. tarda*-infection. The result suggested that *E. tarda* could develop some strategies to achieve a successful intracellular lifestyle, including modulation of phagosome biogenesis, resistance to macrophage microbicidal agent and anti-apoptosis of macrophages. Thus, this work effectively provides useful and novel protein-related information to further understand the underlying pathogenesis of *E. tarda*-infection.

Keywords: *Edwardsiella tarda* Macrophage Proteomic analysis LC-MS/MS

## 1. Introduction

*E. tarda* is an important facultative intracellular bacterium infecting a wide range of hosts from fish to humans [1-3]. Many studies showed that the role of macrophages is essential for host defense against *E. tarda*-infection. Occurrence of the increased numbers of macrophages in diseased fish was the most prominent pathological changes evoked by *E. tarda*. Meanwhile, numerous *E. tarda* could be observed within macrophages [4-8]. *E. tarda* prefers to live inside macrophages in order to replication and escapes the defense of innate immunity, eventually resulting

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