

TITLE: PRELIMINARY EVALUATION IN VITRO OF THE CELL DEATH INDUCTION BY *CORYNEBACTERIUM PSEUDODIPHThERICUM*

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ABSTRACT:

The efficiency of non-phagocytic cells to undergo cell death might be advantageous for the survival of pathogenic microorganisms on host and an important initial step to the infectious processes. *Corynebacterium pseudodiphtheriticum* is a comensal microorganism that is part of the skin and upper respiratory tract microbiotas, and may be implicated as a cause of respiratory and non-respiratory human infections. *C. pseudodiphtheriticum* emerged as an opportunistic pathogen responsible for nosocomial infections associated with high mortality of immunocompromised hosts. In various occasions patients suffering from *C. pseudodiphtheriticum* infections had undergone transplants or underlying medical conditions such as chronic obstructive pulmonary disease, malignancies and AIDS. Little is known about the virulence factors and pathogenesis of *C. pseudodiphtheriticum*. Some characteristics that may explain how *C. pseudodiphtheriticum* strains cause infection in human patients were recently verified. Previous experiments showed that *C. pseudodiphtheriticum* strains were able to survive within HEp-2 cells at 24 h post-infection, as well as the intracellular persistence and bacterial growth in the extracellular environment after 24h period of incubation. The present study aimed to evaluate the ability of *C. pseudodiphtheriticum* isolated from patients with both localized (ATCC10700/ pharyngitis) and systemic (HHC1507/bacteremia) infectious process to induce epithelial cell death (HEp-2 cells). Host cell death and nuclear alterations were evidenced by the Trypan blue exclusion assay and DAPI staining fluorescence microscopy. Both Trypan blue staining and DAPI fluorescence methods indicated a significant increase in the number of dead cells, and morphological nuclear changes in HEp-2 cells 24h post infection, respectively. The modifications of morphology of HEp-2 cells included vacuolization, nuclear fragmentation and formation of apoptotic bodies, suggesting that *C. pseudodiphtheriticum* isolated from infectious processes is capable to induce cell death, and may be relevant during the host infection.

Keywords: *Corynebacterium pseudodiphtheriticum*, invasion, persistence and cell death

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