CELLULAR MORPHOLOGY OF *MYCOBACTERIUM AVIUM* DURING ITS ADAPTATION TO DORMANCY

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Mycobacterium avium is widely distributed in the environment, and the exposure to this microorganism is common. However, while many persons are only transient colonized by this mycobacteria, individuals with AIDS are particularly susceptible to this infectious agent; in such persons, it disseminates into the host producing debilitating symptoms and shortened survival.

The responses of mycobacteria to oxygen and nutrient depravation have been studied in several laboratories, primarily to understand the physiological state of *M. tuberculosis* during dormancy. Recently, another research group has demonstrated that *M. avium* also is able to develop the mechanisms of adaptation to dormancy due to hypoxic and starvation conditions. Thus, the objective of this study was to identify the morphological changes in *M .avium* throughout its adaptation to unfavorable growth conditions. In order to accomplish this objective, two experimental models were used: the Wayne model for dormancy due to lack of oxygen, and the Archuleta et al. model for dormancy due to starvation conditions. Cells of *M. avium* were harvested at different times during dormancy and were analyzed by transmission (TEM) and scanning (SEM) electron microscopy.

During the exponential phase of growth, *M. avium* showed a characteristic and standard bacilli morphology of 3 μm long and 0.5 μm wide, with a smooth surface. In contrast, during its adaptation to dormancy by hypoxia, its size started to decrease down to 1 μm at day 26 and to 0.5 μm at day 35. In addition, the proportion of rough cells started to increase thorough time, finding 50% of rough cells at day 26 of dormancy and 75% at day 35. Ultra-structural changes were also observed, namely, a more condensed *M. avium* genome during dormancy and the appearance of some intracellular inclusion bodies. Similar morphology and size changes were observed in starvation conditions.