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## On the red fluorescence emission of *Aggregatibacter actinomycetemcomitans*

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### ABSTRACT

A number of studies have indicated that bacteria able to emit red fluorescence can be detected by light induced fluorescence technique and killed by photodynamic therapy. The objective of this study was to investigate the red fluorescence properties of the single gram negative capnophilic bacterium *Aggregatibacter actinomycetemcomitans*, ATCC 33384, and to investigate if these properties were related to the growth, morphology and size of the bacterial colonies. Time trend assessment was made with red fluorescence by QLF (Quantitative Light-induced Fluorescence), as well as with white light digital imaging. It was demonstrated that *A. actinomycetemcomitans*, a single capnophilic bacterium, is able to produce red fluorescence on its own, *i.e.* in the absence of other bacteria strains, and that blood agar is necessary to obtain red fluorescence from this bacterium on culture plates. This bacterium formed smooth circular, bell/dome like colonies increasing in size with time exhibiting various red fluorescence behaviors. A large variation in the fluorescence behavior points out an inhomogeneous distribution of red fluorescence within and between the colonies, *i.e.* the size of the investigated colonies did not correlate with the red fluorescence area, suggesting a dependence on the colony morphology such as the colony growth in height. To our knowledge this is the first study that have shown that *A. actinomycetemcomitans* on its own is able to produce fluorescence in the red spectral region.

### KEYWORDS

*Aggregatibacter actinomycetemcomitans*; Red Fluorescence; Porphyrin; Quantitative Light-induced Fluorescence; QLF

### Cite this paper

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