

Inhibitory effect of serotype a of *Aggregatibacter actinomycetemcomitans* on the increased destructive potential of serotype b

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Objective: The serotype b of *Aggregatibacter actinomycetemcomitans* (*A. actinomycetemcomitans*) induces higher cytokine production in dendritic cells (DCs) compared with the other serotypes. However, this increased immunostimulatory potential was modified when DCs were co-infected with the other *A. actinomycetemcomitans* serotypes. This study aimed to analyze whether the production of interferon gamma (IFN- γ), C-reactive protein (CRP), matrix metalloproteinase (MMP)-2, and MMP-9, as well as the activity of osteoclasts, also varies when DCs are co-infected with the *A. actinomycetemcomitans* serotypes. **Materials and Methods:** Human DCs were stimulated with the *A. actinomycetemcomitans* serotypes using the following stimulatory conditions: serotype a/b/c/a+b/a+c/b+c/a+b+c. The IFN- γ , CRP, and MMP-2 levels were quantified by ELISA. The active form of MMP-9 was quantified using fluorescent functional assays. The MMP-2 gelatinolytic activity was identified by zymogram. The osteoclast activity was determined by quantifying the TRAP expression and resorption-pit formation using cytochemistry and osteoassays. **Results:** Higher levels of IFN- γ , CRP, MMP-2, MMP-9, and osteoclast activity were detected when DCs were stimulated

with the serotype b of *A. actinomycetemcomitans* compared with the others. This increased immunostimulatory potential attributed to serotype b diminished when DCs were co-infected with the serotype a. Conclusions: This study provides new insights into the virulence of *A.*

actinomycetemcomitans and reveals important differences in the immunostimulatory and pro-destructive potential among its serotypes. © 2019 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd. All rights reserved

A. actinomycetemcomitans

bone resorption

cytokines

matrix metalloproteinases

osteoclasts

serotypes

C reactive protein

gamma interferon

gelatinase A

gelatinase B

C reactive protein

gamma interferon

gelatinase A

gelatinase B

MMP2 protein, human

MMP9 protein, human

Aggregatibacter actinomycetemcomitans

Article

bacterial virulence

controlled study

cytochemistry

dendritic cell

enzyme linked immunosorbent assay

human

human cell

nonhuman

osteoclast activity

osteolysis

priority journal

protein expression

serotype

zymography

Aggregatibacter actinomycetemcomitans

classification

metabolism

microbiology

osteoclast

pathogenicity

serotype

Aggregatibacter actinomycetemcomitans

C-Reactive Protein

Dendritic Cells

Humans

Interferon-gamma

Matrix Metalloproteinase 2

Matrix Metalloproteinase 9

Osteoclasts

Serogroup