**Molecular analysis of the Bacteroides fragilis transcriptional regulator BmoR during oxygen exposure**

Teixeira, F.L., Costa[1], S., Pauer, H[1]., Rocha, E.R[2]., Domingues, R.M.C.P[1]., Lobo, L.A[1].

[1] IMPPG/Universidade Federal do Rio de Janeiro; Avenida Carlos Chagas Filho, 373-Centro de Ciências da Saúde- Cidade Universitária, 21941-590 - Rio de Janeiro, Brazil
[2] Department of Microbiology and Immunology - East Carolina University; North Carolina, USA

*Bacteroides fragilis* is the anaerobic microorganism most commonly isolated from endogenous infections. The species is highlighted as a major pathogen in anaerobic infections due to its versatility in the relationship with the host, sometimes as a component of the microbiota, sometimes as a pathogen expressing virulence factors. Aerotolerance seems to contribute decisively in the process of interaction with the host and establishment of the infection. *B. fragilis* can survive when exposed to atmospheric oxygen for up to 72h. Under these circumstances, a strong oxidative stress response (OSR) is activated and the expression of 45% of *B. fragilis* genome is affected. OxyR, the most studied OSR regulator in the species, does not seem to play a major role on the oxygen response despite its importance during hydrogen peroxide exposure. In a previous study, we described the role of BmoR in the OSR of the species. Phenotypical assays showed that the absence of the regulator limited the bacterial growth during oxygen exposure in soft agar. The aim of this study is to further evaluate the role of BmoR in *B. fragilis* using molecular methods. Mutant strains were exposed to oxygen for 1 hour prior to RNA extraction and subsequent cDNA synthesis. Microarray analysis of the stressed cells showed that deletion of *bmoR* leads to a significant up-regulation of thioredoxin (*trxC*) and oxidoreductase genes, this last one located directly upstream of the *bmoR* gene. Quantitative PCR confirmed those results and showed that complementation of the mutant strain with a multi-copy plasmid could not restore their original expression levels, it actually caused a significant reduction in the expression of those genes. Interestingly, expression of *trxC* in a *bmoR*/*oxyR* double mutant is in an intermediate level between the expressions of the respective single mutants, which suggests a possible overlap of both BmoR and OxyR regulons. More research is still needed to understand the mechanisms involved in this response, but our results show that this study may help understand *B. fragilis* response to oxidative stress and still serve as a target in developing new strategies for intervention and control of infections involving this species, even in the medium to long term, given the increasing resistance to antibiotics used in therapy.

Keywords: *Bacteroides fragilis,* Aerotolerance, BmoR, oxidative stress.

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