

STRESS HORMONES INCREASE BIOFILM FORMATION OF ENTEROCOCCUS FAECALIS

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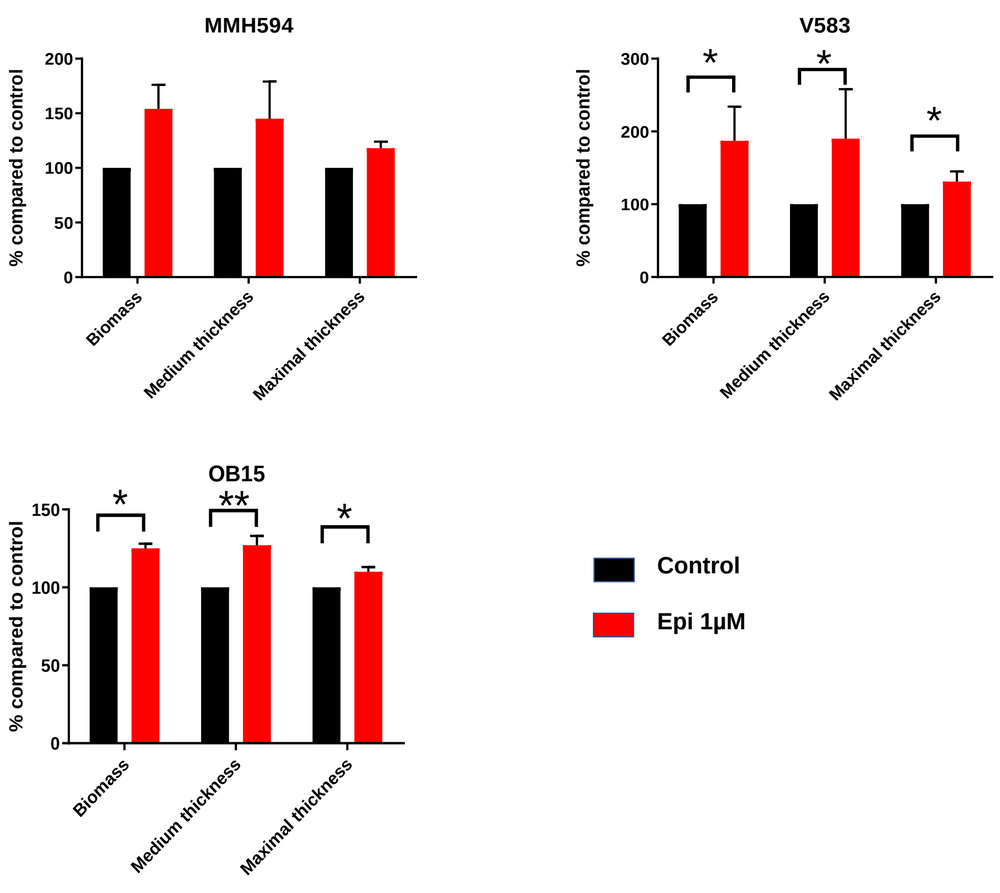
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Objective:
Enterococcus faecalis is a Gram positive, commensal bacterium of the human gut. This bacterium has controversial status due to its emerging role in nosocomial infections, while some strains with beneficial effects are used as probiotics and starter cultures in dairy industry. All these bacteria can be found on skin or in gut where they are continually exposed to various eukaryotic molecules. In this context, the aim of our work was to evaluate the effect of stress hormones on some *Enterococcus* strains.

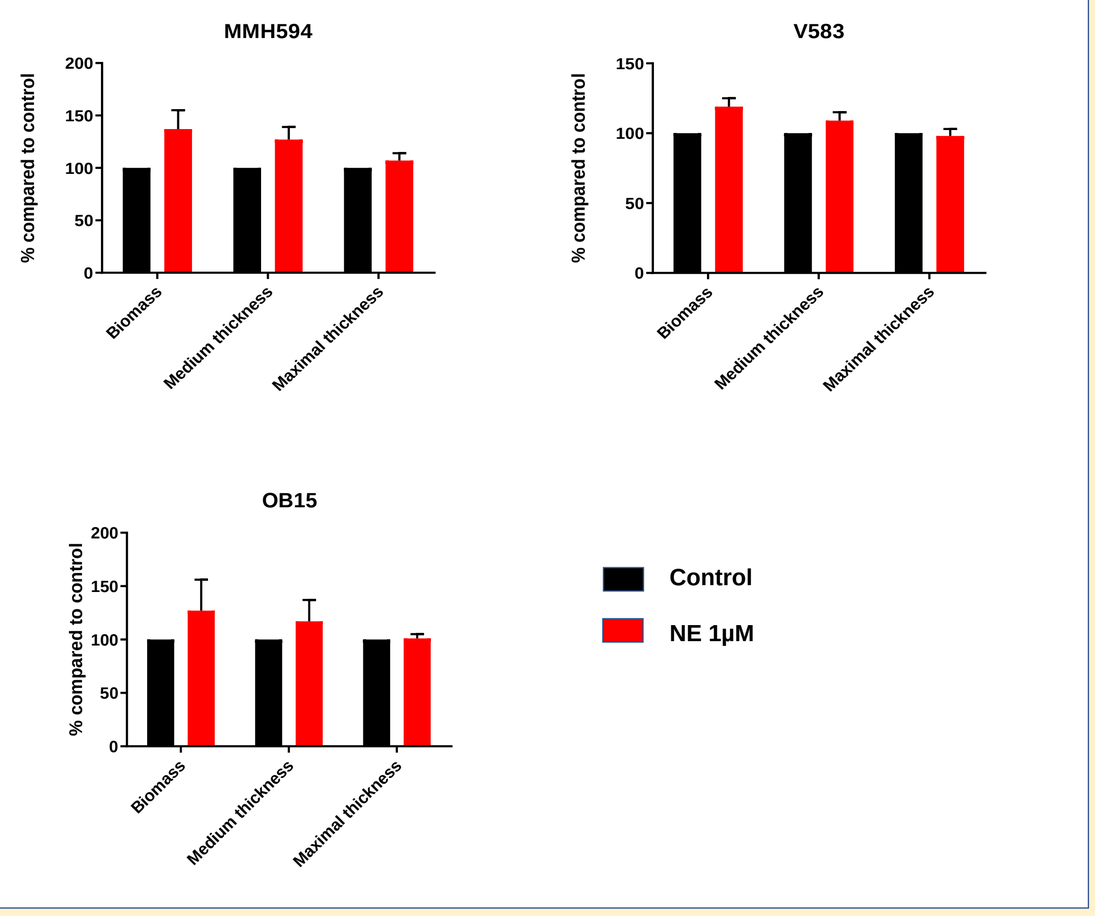
Methods:
Three *E. faecalis* strains were included in this study: *E. faecalis* MMH594 and *E. faecalis* V583, pathogenic strains of clinical origin, and *E. faecalis* OB15, a probiotic strain, previously isolated from tunisian Rigouta (Baccouri et al, 2019, Front Microbiol. doi: 10.3389/fmicb.2019.00881.)
These bacteria were exposed to 1µM of epinephrine (Epi) or norepinephrine (NE), and their capacity to form biofilm were quantified by Confocal Laser Scanning Microscopy (CLSM) after staining with the SYTO-9 green fluorescent nucleic acid stain

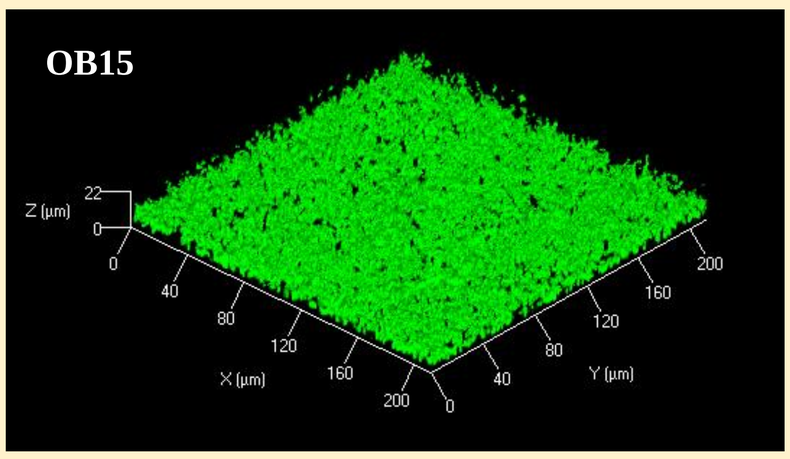
Statistical analysis:
Results were expressed as means ± standard error (SE) of three experiments done in triplicate. Analysis of statistical significance was performed with Student's t-test and GraphPad Prism8 (* : $p < 0.05$, ** : $p < 0.01$)

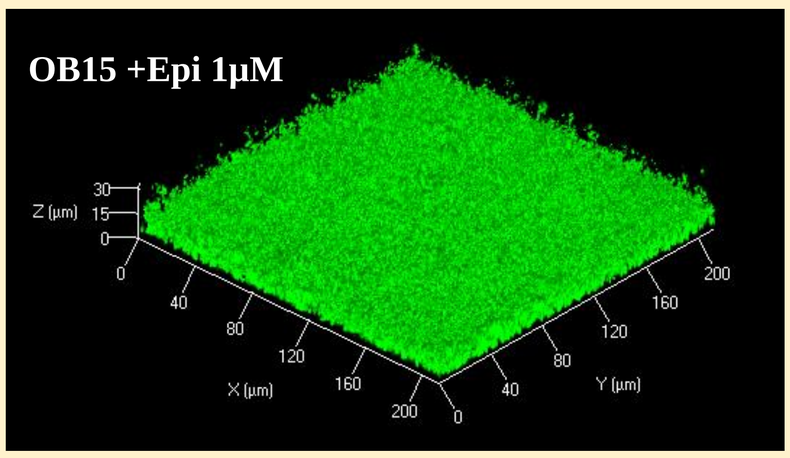
Quantification by CLSM of *E. faecalis* biofilms treated by Epi



Quantification by CLSM of *E. faecalis* biofilms treated by NE







Results:
Stress hormones (Epi and NE) were found to modulate the formation of biofilms (biomass, thickness) in *E. faecalis*. The major effect was observed for the *E. faecalis* OB15 probiotic strain, with significant increases of biomass (+25%) and thickness (+27%) with Epi.

Conclusions:
This study showed for the first time that stress hormones could increase biofilm formation in *E. faecalis*. Future experiments will aim to decipher the mechanisms involved and to identify an adrenergic putative sensor in *E. faecalis.* This may help to develop new strategies of antagonism to prevent the colonization by opportunistic pathogens.

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