

124. The role of the gene *codY* in *S. epidermidis* biofilm formation

Nathalie Lopes, Nuno Cerca, Ângela França

LIBRO, CEB, University of Minho, Braga, Portugal

Background: The development of viable but non-culturable (VBNC) cells within biofilms is a major clinical concern, as it contributes to the recurrence of biofilm-related infections. CodY, a global transcriptional regulator of metabolism and virulence genes, was previously found upregulated in *Staphylococcus epidermidis* 9142 biofilms with higher proportions of VBNC cells, suggesting a potential role in the mediation of the VBNC state.

Objective: Due to strain-to-strain variability, we aimed to assess the expression of the gene *codY* in other *S. epidermidis* strains, including the strain 1457, which is amenable to mutagenesis. Additionally, to further study the function of CodY in the development of VBNC cells, a *codY* deletion mutant was constructed in the 1457 background.

Results: Under VBNC-inducing conditions, *codY* expression was significantly increased in all strains tested (2.5- to 4.4-fold). Furthermore, the deletion of *codY* gene in the strain 1457 resulted in a reduced growth rate and, more importantly, in a reduced biofilm biomass production when compared with the wild type (35% of reduction).

Conclusion and significance: Our findings suggest an important role of *codY* gene in *S. epidermidis* virulence, as biofilm formation, one of the most important virulence factors of this bacterium, was affected by *codY* deletion. Moreover, to date, this is the first study assessing the role of *codY* gene in *S. epidermidis*.

This study was supported by the Portuguese Foundation for Science and Technology (FCT) by the funded project PTDC/BIA-MOL/29553/2017, under the scope of COMPETE2020 (POCI-01-0145-FEDER-029553) and by the strategic funding of unit (UIDB/04469/2020).