

P2311 Effects of *Lactobacillus acidophilus* and *L. casei* on quorum sensing system genes of methicillin-resistant *Staphylococcus aureus*: an *in vitro* assayBugra Han Egeli*¹, Mehmet Demirci², Hrisi Bahar-Tokman¹¹ Cerrahpasa School of Medicine, Istanbul University-Cerrahpasa, Istanbul, Turkey, ² School of Medicine, Beykent University, Istanbul, Turkey

Background: The quorum sensing ability that functions over accessory gene regulator (*agr*), has a prominent role on pathogenesis of the strains of *Staphylococcus spp.* and especially inhibition via targeting the *agr* system can potentially suppress the virulence of staphylococci. The aim of this study was to show the changes in *agrA* and *RNAIII* genes controlling the QS system when methicillin resistant *Staphylococcus aureus* (MRSA) strains are inoculated in same in-vitro environment with *L. acidophilus* and *L. casei*.

Materials/methods: Between January-March 2017, 20 different MRSA strains obtained from surgical wounds were used. 250 µL of a 2 McFarland suspension of each MRSA strains was added in three different tubes containing tryptic soy broth. Additionally 10⁶CFU/mL of *Lactobacillus acidophilus* ATCC 4356 and *Lactobacillus casei* ATCC 393 were added in 1st and 2nd tubes respectively. The 3rd tubes were without *Lactobacilli*. The same process was also applied with MRSA ATCC BAA-1754 as control. After incubation RNA was isolated with High Pure RNA isolation kit (Roche), cDNA was synthesized, *agrA* and *RNAIII* genes expressions runs were performed on LightCycler 480 system. Isoleucyl-tRNA synthetase (*ileS*) gene of *S. aureus* was used as reference gene. Livak's $\Delta\Delta C_t$ method and Mann-Whitney U test were used for calculations of results and for statistical analyses respectively.

Results: The *agrA* and *RNAIII* expression levels of MRSA strains inoculated with *L. acidophilus* and *L. casei* were lower comparison with those of no exposure ($p < 0.0001$). A statistically significant difference was not found between *L. acidophilus* and *L. casei* in terms of change in *RNAIII* gene expression levels ($p > 0.05$), however comparing with *L. acidophilus*, *L. casei* reduced the *agrA* gene expression level with a statistically significant difference ($p < 0.0001$).

Conclusions: In conclusion, *L. acidophilus* and *L. casei* were found to downregulate *agrA* and *RNAIII* gene expression in an in-vitro environment. Especially the fact that *L. casei* reduced *agrA* in a more significant level, made us thought that the effect of *Lactobacillus* on *agrA* and *RNAIII* genes can varies according to the species. More extensive studies including more *Lactobacillus species* were needed to develop new approaches about their effect on *agrA* and *RNAIII* gene expression levels.