



Book of Abstracts

III International Conference on Antimicrobial Research

Madrid, Spain, 1-3 October 2014

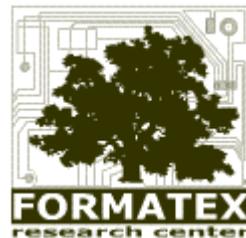
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III International Conference on Antimicrobial Research - ICAR2014

Madrid (Spain), 1-3 October 2014



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Evaluation of the activity of potential antimicrobials against lactic acid bacteria isolated from spoiled food sauces in media with or without added sucrose

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Although lactic acid bacteria (LAB) do not negatively affect human health and may have potential desirable effects on the organoleptic characteristics of food, they can also cause food spoilage by producing off-flavours and carbon dioxide. On this circumstance the intrinsic high resistance of LAB to acidic conditions and antimicrobial agents poses a problem to the food industry. Furthermore, most of the *in vitro* antimicrobial testing does not take into account the effect of certain abiotic conditions of the food matrices that may reduce or eliminate the antimicrobial effect.

The aim of this work was to evaluate the potential of three antimicrobials (chitosan, rosmarinic acid and sodium diacetate) against four aerobic LAB isolated from spoiled sauces under standard culture conditions and in media supplemented with sucrose at 10 g/L thus approximating as much as possible sauce conditions. Minimum inhibitory concentration (MIC) and Minimum bactericidal concentration (MBC) values were determined and inhibition curves were plotted.

The results obtained showed that under standard conditions all compounds exhibited significant antimicrobial activity, with MIC values varying between 0.25 and 0.5 mg/ml for chitosan, 0.5 and 1 mg/ml for sodium diacetate and of 4 mg/ml for rosmarinic acid, and complete bacterial growth inhibition within 24 h of exposure. On the other hand, it was found that the activities of sodium diacetate and rosmarinic acid in the sucrose supplemented media were strongly affected. Growth of the selected LAB strains was not inhibited by rosmarinic acid upon 48h incubation and it was only 30% inhibited by sodium diacetate. Only chitosan was not affected by the presence of sugar as evidenced by the MIC/MBC values and the inhibition curves obtained that were the same in the presence of sugar..

The results show that despite the demonstrated potential *in vitro*, the use of rosmarinic acid and sodium diacetate as antimicrobial compounds can be impaired due to interactions with the food matrix and/or to the protection offered by food components to the microorganisms. Remarkably, chitosan was capable of maintaining an effective antimicrobial activity under the sauce simulated conditions.

Keywords: Antimicrobial; LAB; abiotic factor; sucrose supplementation