

21.- Quorum-sensing control of bacteriocin production in olive fermentations

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Bacteriocin production in many lactic acid bacteria is controlled by specific peptides called autoinducers (AIPs) via a sophisticated mechanism which senses cell density and is known as *quorum sensing* (QS). Bacteriocin production in *Lactobacillus plantarum* NC8 was found to be regulated by a QS mechanism which is activated by both a dedicated AIP and, unexpectedly, the presence of specific competing bacteria in the culture medium. Consecutive series of olive fermentations were carried out in order to check whether bacteriocin production by the NC8 strain could take place in such a natural environment. We found that the presence of NaCl at concentrations above 1 % (w/v) in the olive brines abolished bacteriocin production by preventing the specific AIP from activating the QS circuit. The use of water instead of brine for the olive fermentations allowed AIP detection by the QS system and hence bacteriocin production. Thus, the presence of specific inducing bacteria could be recognized as an environmental stimulus to switch bacteriocin production on so that survival of NC8 was enhanced in the olive fermentations. The design of bacteriocin-producing starters for olive fermentation should take into account their constitutive *versus* regulated character.