

INVESTIGATION OF THE ANTIMICROBIAL EFFECT OF WATER-SOLUBLE EXTRACTS OF DIFFERENT CHEESES, NISIN AND LYSOZYME ON *Clostridium* SPECIES RESPONSIBLE FOR LATE BLOWING DEFECT

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ABSTRACT

The Late Blowing Defect(LBD) is the structural and sensory changes that occur in cheese as a result of butyric acid fermentation by spore-forming absolute anaerobic *Clostridium* species. For this reason, significant economic losses occur in the dairy industry in the world. In this study, the antimicrobial effects of nisin, lysozyme and water-soluble extracts (WSE) from different cheeses on *Clostridium* spp., which are responsible for LBD, were investigated. In our study, 2 different *C. sporogenes* (73 and 97) and 1 *C. butyricum* (99) isolated from raw milk in SDU Food Engineering laboratories were used. In this study, WSE was obtained from 12 different cheeses, including 6 different Ezine cheeses, 4 Classic Beyaz cheese, 1 İzmir tulum cheese and 1 Şavak tulum cheese that are commercially available in Turkey. After determining the peptide profiles of the WSPs in HPLC, the antimicrobial effect on *Clostridium* spp. was investigated. In studies carried out at 50 mg/ml concentration, it was determined that all extracts did not have an antimicrobial effect on *Clostridium* spp. vegetative cells and spores, on the contrary, they increased (encouraged) the growth of *Clostridium* spp. cultures. The minimum inhibitory concentration (MIC) of nisin on *Clostridium* spp. vegetative cells was determined as 6.25 µg/ml and 12.5 µg/ml for *C. sporogenes* (73) and *C. sporogenes* (97), respectively, and 6.25 µg/ml for *C. buytricum* (99). It has been determined that the susceptibility to nisin is different between *Clostridium* species. The MIC value of nisin on all *Clostridium* spp. spores was 1.56 µg/ml. According to our results, *Clostridium* spp. spores were found to be more sensitive to nisin than vegetative cells. In addition, lysozyme did not show any antimicrobial effect on *Clostridium* spp. vegetative cells and spores at a maximum concentration of 10 mg/ml.

Keywords: Late Blowing Defect, nisin, lysozyme, water-soluble extracts