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Study of the effects of pH and Sodium Chloride on the growth of *Listeria monocytogenes*

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Human illness and death have resulted from the consumption of vegetables contaminated with *Listeria monocytogenes*. This study evaluated the effectiveness of NaCl and pH on the growth of *Listeria*. Therefore, a series of experiments was designed to investigate these factors. Nine strains (NCAIMB1454, NCTC 3b, 11/4.12t03, CCM5576, CCM7202, NCAIM B01966T, NCTC ½ a, NCTC 3a, CCM 4699) were examined. Firstly, the impact of different NaCl concentrations on *L. monocytogenes* was monitored. Secondly, the influence of stress adaptation (growth under suboptimal conditions, using a wide range of media acidified up to pH 4 with HCl) on *L. monocytogenes* resistance was assessed. At 37 °C, we could observe decreasing patterns of biofilm formation in almost all *L. monocytogenes* strains when the sodium chloride concentration increased from 0.05 to 15%. While at pH values higher than 4, *L. monocytogenes* strains formed higher biofilm amounts showing that they prefer to grow and form biofilms in a neutral environment. These findings extend our understanding of the application of NaCl and pH stress adaptation in the food industry and their efficiency against *Listeria* species and their associated biofilms.

Keywords: *Listeria monocytogenes*, NaCl, pH

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Starch content and composition of *Sorghum bicolor* (L.) Moench and *Panicum miliaceum* L.

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Nowadays, the growing frequency of extreme weather conditions increasingly draw our attention to those plants that have excellent adaptability. The extreme weather conditions, such as the increase in average temperature and the reduction in the amount of precipitation, can be perceived and will be more common in the future. Extremely drought-tolerant plants like millet which have a low water demand and sorghum, whose cultivation remains profitable provide potential despite unfavourable conditions. The starch content, composition and starch damage are important parameters of evaluation of flour quality as they have significant influence on their rheological behaviour during processing. Our aim was to study the effect of different doses of fertilizers on total starch content and starch properties and compare these results of sorghum hybrid and proso millet varieties, which samples were cultivated at Research Institute of Karcag, Institutes for Agricultural Research and Educational Farm, University of Debrecen.