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Survival of different *Listeria monocytogenes* strains to combined stresses

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In order to evaluate the influence of pH, storage temperature, salt concentration and medium in the survival of six different strains of *L. monocytogenes*, previously isolated from "Alheira", sixteen different conditions were selected according to a 24 factorial experimental design. The selected limits for the factors were: 4 and 5 for pH, 4 and 18 °C for the storage temperature, 1 and 2 % (w/v) for the percentage of salt and for the enumeration of the survivors the results obtained in trypticase soy agar (TSA) and Palcam medium were taken in consideration. Cellular suspensions were inoculated in buffered peptone water (BPW) medium previously equilibrated at the selected conditions and the cellular survival was evaluated during 35 days of storage. At appropriate intervals, viable cells were enumerated on TSA and Palcam by the drop count technique. Except for *L. monocytogenes* ESB_88, the temperature of storage and the pH affected significantly the cellular survival during the stress treatments ($p < 0.05$). In some cases, the combined action of these two factors also had a significant effect on the cellular viability ($p < 0.05$). No significant differences were obtained between the cellular counts in Palcam and TSA medium. The survival during the combined stresses was strain dependent.

REFERENCE
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Survival of different *Listeria monocytogenes* strains to adverse conditions

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In this study, survival of different strains of *Listeria monocytogenes* - isolated from cheeses and from the processing plant (raw materials, environment) - when subjected to adverse environmental conditions was evaluated. Conditions investigated were i) sterile Ringer's solution previously adjusted to 34 % of NaCl and subsequently stored at 8 and 22 °C during 20 months, ii) sterile Ringer's solution previously adjusted to pH 4.0 with lactic acid and subsequently stored at 8 °C during 10 months and iii) buffered peptone water previously equilibrated to 58 °C. The enumeration of survivors was performed in Palcam and TSA media by the drop count technique. Survival to the different stresses was dependent on the strain being investigated. No correlation was found between the survival and the origin of the isolates.