Bacteriocins are one of the defense mechanisms used for microorganism. These peptides are of great interest because of the advantages they have over most of therapeutic antibiotics. *Lactobacilli* have been used traditionally for food preservation, which allows to some of them to be considered as GRAS food additives. In this study we evaluated the usefulness of the neutralized protein crude extract produced by the strain *Lactobacillus plantarum* LE5 isolated from corn ensilage which produced an anti-listeria bacteriocin. The protein crude extract was produced in a MRS glucose-free medium supplemented with fructooligosaccharides 2%. To avoid the effect of biomass and organic acids in the antimicrobial activity assays, the culture was centrifuged at 5000 g for 30 min and 4 °C. Supernatant pH was adjusted to 6.5, and filtrated through a sterile 0.22 μm membrane. The effect of storage temperature, initial viable cell concentration of *L. monocytogenes* onto shrimp ceviche, and protein crude extract on the kinetics of *L. monocytogenes* death was determined through a factorial design. High and low levels of these factors were: 4 and 20 °C, $10^{2}$ and $10^{6}$ CFU of *L. monocytogenes* mL$^{-1}$, and 2.5 and 5% v/v of protein crude extract. Controls were settled for each experimental condition without protein crude extract. Viable cells of *L. monocytogenes* were determined by culturing the samples into *Listeria* selective Agar (Oxford). Controls presented an increased on the specific growth rate with increments in temperature and initial CFU of *L. monocytogenes*, with a good correlation ($r^2 > 0.94$). The addition of the protein crude extracto the shrimp ceviche at the different conditions of temperature and initial CFU of *L. monocytogenes*, produced a maximum death kinetic constant ($1.4\pm2$ h$^{-1}$) of *L. monocytogenes* with a 5% v/v of protein crude extract and $10^{4}$ CFU of *L. monocytogenes* mL$^{-1}$. No significant effect ($P > 0.05$) of the temperature on the death kinetic constant was observed. In summary, the results showed the feasibility of using the protein crude extract produced by the isolated strain *Lactobacillus* LE5 for the control of *L. monocytogenes* in food.