

Food safety is a top priority due to the recurring infectious diseases caused by food pathogens such as *Listeria monocytogenes*. The environment is a significant source of *Listeria* in raw food, leading to contamination of food processing plants and, consequently, of final products. A particular risk is from the strains that persistently inhabit the production environment and act as a constant source of contamination and challenges we face in eliminating this pathogen from food. Therefore, all the measures that lead to the control of *L. monocytogenes* and increase food safety are strongly justified. We can achieve this by increasing our knowledge about the pathogen's stress physiology. The criterion applies to an innovative method of inactivating foodborne pathogens called photodynamic inactivation, the effect of which on *L. monocytogenes* is not yet fully understood. The research planned in this project will reveal the impact of its treatments on *Listeria monocytogenes* and help understand how the pathogen responds to stress and recover from the damage caused by treatment. It will also evaluate its impact on short-term stored products' quality and antioxidant properties. Consequently, allowing us to learn the mechanisms underlying the challenges in eliminating this pathogen from food for the benefit of consumers and its manufacturers. Ultimately, the project will contribute to a better understanding of how the microorganism will survive in the production environment and what implications it may have on the entire food chain.