K **:** Clostridium botulinum; Food safety; Innovative approaches; High Pressure Processing (HPP); Non-thermal plasma; Ultraviolet light

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Clostridium botulinum, a notorious bacterium that produces the potent botulinum neurotoxin, is a signi cant concern in the food industry due to its ability to cause severe and potentially lethal foodborne illnesses. As the demand for safe and minimally processed foods grows, so does the need for innovative methods to e ectively manage Clostridium botulinum hazards in various food products. In recent years, advancements in technology and research have led to the development of novel approaches that o er enhanced control over this dangerous pathogen. is article explores some of these innovative strategies and their potential to revolutionize food safety practices [1].

Among physical food treatments, heating is the principal and traditional method of microbial inactivation. Furthermore, the spores of C. botulinum are the reference point for establishing thermal treatment e ciency scales for low-acid canned foods. ese heat treatment bene ts come with some undesired e ects on food, though, such as changes in the physicochemical properties and organoleptic characteristics. erefore, alternative technologies have always been in demand in order to conserve these product properties while inactivating the C. botulinum hazard [2]. Ionizing radiation was tested for food safety in the 1960s, and since then, there have been many recent advances in other nonthermal technologies, such as high-pressure processing (HPP), cold plasma (CP), pulsed electric eld (PEF), intense light pulses (ILP), ultraviolet (UV), ultrasound waves, etc. Understanding and analyzing the speci c mode of action of di erent technologies aids in the design and implementation of strategies for exploiting their potential cumulative or synergistic e ects in order to control the C. botulinum hazard in food products.

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