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Food safety: Advanced approach at minimizing pathogens on fresh produce

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Ready-to-eat produce requires limited processing prior to consumption and may harbor human pathogens that can present a significant food safety risk. The presence of human pathogens, as well as, incidence of outbreaks associated with ready-to-eat fruits and vegetables suggest that contamination happens at some point from farm to table. As recent as 2016 the Center for Disease Control and Prevention (CDC) has reported multistate outbreaks of hepatitis A linked to frozen strawberries, *Listeria* linked to frozen vegetables and Shiga toxin-producing *E. coli* O157 linked to alfalfa sprouts. Methods used for eradicating pathogens, on the surface of fresh produce, should also preserve the integrity and nutritional content; therefore, the methods should exclude thermal exposure. Currently, non-thermal processing methods explored include High Pressure Processing (HPP), Chemicals (chlorine, surfactants) Gases (ozone, chlorine dioxide), Ionizing radiation (gamma irradiation, electron beam) and Light sources (ultraviolet, pulsed light). Fresh produce may be cleaned postharvest; however, the lack of a visible indication of the presence of pathogens can be fatal to the average consumer. The survival of pathogens on the surface of fresh produce is associated with the pathogen's ability to attach to the surface, as well as, to the packaging material surface. Biofilms are adherent cells, which may be responsible for the survival and attachment of pathogens on fresh produce and packaging material surfaces. Advances in food safety, such as utilizing light sources, may be the answer to reducing food safety incidents related to fruits and vegetables.

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