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Role of food sanitising treatments in inducing the 'viable but nonculturable' state of microorganisms

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Abstract: By definition, foodborne outbreaks are illnesses affecting two or more people, correlated in terms of space and time, as a result of the ingestion of etiologic agents present in a common food. Ready-to-eat food products are normally subjected to treatments of sanitisation during processing that aims to miminise the microbial load. However, microorganisms have developed mechanisms to withstand adverse environmental conditions and fight for survival, including the ability to reduce their exposure to external attack through reversible modification of the morphology and physiology of their cell. This results in a significant change of their viability, which becomes undetectable through conventional culture techniques. Subsequent 'resuscitation' of these organisms in favourable food environment can represent a serious public health risk. This review aims to examine the existing experimental evidence on the role of different sanitising approaches in inducing 'viable but nonculturable' state in microorganism and discuss possible approaches to reduce its occurrence.