

Efficacy of bacteriophages to reduce Salmonella in mung bean sprouts

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Abstract

The sprouts are nutritionally rich snack foods. They are helpful in digestion and contribute various health benefits. However, many outbreaks associated with consumption of pathogen-contaminated sprouts have been reported. Minimally processed sprouts are preferred for consumption. Consequently, population of pathogens like Salmonella increases to significant level. The bacteriophages, vB_SalS_PM8 (PM8) and vB_SalM_PM10 (PM10) were isolated from sewage and characterized for their host range, morphology, growth and genomic features. The ability of these phages to reduce Salmonella in sprout preparation was tested. Mung bean seeds were artificially infested with Salmonella serovars viz. Typhimurium, Typhi and Enteritidis. Simultaneously, phages, PM8, PM10 and PM8-PM10 mixture were added at multiplicity of infection of 10³, 10³ and 2×10³, respectively. In the samples devoid of phages, 48 hours post inoculation, it was found that the Salmonella population reaches to 9 ±0.2 log₁₀ CFU g⁻¹. Phages, PM8, PM10 and PM8-PM10 mixture, reduced Salmonellae by 96.2, 92.1 and 98.8%, respectively. Therefore, the phages, PM8 and PM10 can be used in processes of preparation of sprouts as a hurdle technology for reduction of Salmonellae.

Biography

Kapadnis B. P. completed his PhD on Biology of Zoosporic fungi, from Savitribai Phule Pune University, Pune. He has over 170 publications that have been cited over 2337 times, and his publication H-index is 51 and has been serving as an editorial board member of reputed Journals.



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