Complete genome analysis of *Bacillus subtilis* Miz-8 isolated from "Bekang" traditional fermented soybean food of Mizoram, India

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Purpose: Fermented soybean Foods (FSF) is popularly consumed in the South-East Asian countries. *Bacillus* species, a predominant microorganism present in these foods have demonstrated beneficial and deleterious impacts on human health. These microorganisms produce bioactive compounds during fermentation that have beneficial impacts in improving human health (1). Objective: To perform complete genome analysis of *Bacillus subtilis* Miz-8 isolated from "bekang" traditional fermented soybean food, an Eastern state of India. Methods: *Bacillus subtilis* Miz-8 was subjected to whole genome sequencing by Illumina Hiseq sequencing technology and analysis were performed using various bioinformatic tools. For a reliable identification of the strain Miz-8, phylogenetic and Multilocus Sequence Typing (MLST) analysis were performed. Mining of secondary metabolites, antibiotic resistance genes, virulence genes, and prophage clusters were determined. Findings: Complete genome of *Bacillus subtilis* Miz-8 consists of a chromosome and a plasmid which were uploaded in NCBI (GenBank ID: CP076731.1, CP076732.1) respectively. The strain Miz-8 belongs to *Bacillus subtilis* subsp. *subtilis* by MLST analysis. Strain Miz-8 revealed few secondary metabolites such as surfactin, fengycin, bacillibactin and antibiotic resistance related genes such as *tmrB, vmlR, aadK*. Virulence genes encoding immune evasion, iron acquisition and toxin genes were detected. Thirteen prophage regions were identified, among them one intact and two questionable and the rest were incomplete regions.

References

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Biography

Elavarashi E, is a recipient of SRU Chancellor Fellowship Grant for full-time PhD programme in April 2009 at Sri Ramachandra Institute of Higher Education and Research (SRIHER)**,** Chennai, India. She has done PhD in Microbiology on 'Phenotypic and genotypic characterization of dermatophytes from clinical specimens using novel markers'. Now her current research interest is to isolate potent probiotic *Bacillus* strains from various sources like fermented soybean foods and soil. She has worked on *Bacillus* since 2019, isolated *Bacillus* isolates from various sources and evaluated extracellular enzyme activity, biofilm formation and antimicrobial activity of *Bacillus* spp. against pathogens. Recently, she has analysed the complete genome of *Bacillus* and is yet to be published.

Publications

1. Trishala G, Harini Keerthana S, Kumar P, Elavarashi E. Impact of *Bacillus* in fermented soybean foods on human health. *Annals of Microbiology* 2021; 71, https://doi.org/10.1186/s13213-021-01641-9.

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Category: Oral presentation