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COLONIZATION AND GERMINATION OF PIGMENTED *BACILLUS AQUIMARIS* SH6 SPORES IN SHRIMP'S GUT CONFERRING ITS PROBIOTIC EFFECTS TO WHITE-LEG SHRIMPS

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B*acillus aquimaris* SH6 spores have been proven to produce carotenoids and exhibit beneficial effects to shrimp's health. However, it is not clear how SH6 spores transit and interact with shrimp's gut, which is a key information conferring its effects to the host. In this study, our data revealed that counts of SH6 spores in shrimp's gut increased over feeding time, up to 70 CFU/gut after 28 days, indicating colonization of SH6 spores in shrimp's gut. We measured mRNA expression coding for SH6 amylase from total RNA extracted from shrimp's gut, we detected germination of the live SH6 spores during transition and colonization of SH6 spores in shrimp's gut. As a result, after 14 day-feeding, SH6 spores induced Superoxide Dismutase (SOD) level nearly twice compared to other three control groups (Negative, Carophyll, and SH6 carotenoids). After 28 day-feeding, we found that bacterial population of white-leg shrimp's gut in SH6 spore groups were the most diversified with the presence of 6 major useful species, and that the total live counts in SH6 spore groups were about 2-fold higher (330-483 counts/gut) than that of the control groups (163-213 counts/gut). The Astaxanthin level and red color score were highest in the Carophyll and SH6 carotenoids groups (OD480 = 1.6-2.2; red color: 22), then followed by the 5 x 10⁶ and 1 x 10⁶ groups (OD480 = 0.81; red score: 21), which was 1.6 fold higher than the control and 5 x 10⁵ group (OD480 = 0.37-0.50; red score: 20). Weight gain was effective in the three groups including 5 x 10⁶, 1 x 10⁶ and SH6 carotenoid groups compared to others. In conclusion, SH6 spores can colonize, germinate and improve useful microbiota of shrimp's gut to show its probiotic activity to the host, and that the dose of 1 x 10⁶ cfu/g pellet was optimal.

Biography

Anh Thi Van Nguyen has completed her PhD (2004) in Life Science from Tohoku University, Japan. Currently, she is a Lecturer at Key laboratory of Enzyme and Protein Technology, VNU University of Science, Vietnam National University, Hanoi, Vietnam. She is an expertise in diversified fields of Recombinant Protein Expression on the Surface of *Bacillus subtilis* Spores for Application in Vaccine and Drug Delivery, Development of Silica Coated Magnetic Nanoparticles to extract DNA/RNA from Clinical Samples for Diagnostics, and Production of Novel Probiotics and Prebiotics as Functional foods. She has published 22 papers in international referred scientific journals (ISI ranking), authored 3 contracts of Scientific Transferred Technology.

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