PROPERTIES AND SAFETY EVALUATION OF *BACILLUS VELEZENSIS* BUU004 AS PROBIOTIC AND BIOPRESERVATIVE IN SEAFOOD PRODUCTS

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Abstract. *Bacillus* probiotics have been proposed for inhibition of several foodborne pathogens, which cause considerable public health burden and pose a challenge to control measures. Selection of probiotics requires close scrutiny in terms of biosafety and probiotic characteristics prior to incorporation into human food products. *Bacillus velezensis* BUU004, previously used as an aquaculture probiotic, showed strong antagonistic effect on seafood spoilage bacteria, namely, *Aeromonas schubertii*, *Proteus mirabilis*, *Sphingobacterium spiritivorum, Staphylococcus hominis*, *Staph. mucilaginosus*, *Staph. saprophyticus*, and *Staph. warneri*, and on foodborne pathogens, *Bacillus cereus* and *Staph. aureus*. *B. velezensis* BUU004 was susceptible to several classes of antibiotics used in human and veterinary clinical therapy, was α-hemolytic with absence of hemolysin genes: *hlyI*/*clo*, *hlyII* and *hlyIII* homolog, did not carry enterotoxin genes: *cytK*, *hblACD* and *nheABC*, harbored genes encoding proteins associated with cell adhesion activity, namely, fibronectin-binding, collagen-binding surface and Gram-positive anchor proteins, and exhibited robust survivability under gastric and bile conditions. In conclusion, *B. velezensis* BUU004 was non-pathogenic with the characteristics of a potential probiotic safe for use as a source of biopreservative to prevent foodborne infections of seafood products.

Keywords: *Bacillus velezensis* BUU004, antibacterial activity, biopreservative, probiotic, safety, seafood

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