

Temperature Effect on Korean *Steinernema glaseri* and *S. longicaudum* and Symbiotic Bacteria

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Temperature effects on pathogenicity, development, reproduction, and mobility of Korean entomopathogenic nematodes, *Steinernema glaseri* Dongrae strain and *S. longicaudum* Nonsan strain were investigated at 13°C, 18°C, 24°C, 30°C, and 35°C. In addition, effect of temperature on growth and pathogenicity of symbiotic bacteria, *Xenorhabdus poinarii* from *S. glaseri* Dongrae strain and *X. beddingii* from *S. longicaudum* Nonsan strain were observed. Nematodes were able to kill *Galleria mellonella* larvae and to develop to be adult at all given temperatures but not reproduced at 13°C and 35°C. Favorable temperature for *S. glaseri* was slightly higher than that for *S. longicaudum*. Larval mortality was significantly lower at low temperatures, 13°C and 18°C. Lethal dose and lethal time decreased with increasing temperature. LD50 values of *S. glaseri* Dongrae and *S. longicaudum* Nonsan were 33.8 IJs and 11.3 IJs at 13°C while 0.9 IJs and 3.5 IJs at 35°C. The number of progeny was low and the time for the first emergence of IJs was prolonged at low temperature, 18°C. At the rate of 160 IJs/larva, progeny of *S. longicaudum* Nonsan reached 71102/cadaver at 24°C but 12802/cadaver at 18°C. Moreover, at 18°C, the time for the first emergence of progeny was approximately 25 - 30 days after inoculation while 9 - 10 days at higher temperatures. Temperature influenced growth of symbiotic bacteria. Generally, all two species of symbiotic bacteria, *X. poinarii*, and *X. beddingii* grew and reached stationary phase at all given temperature, 13°C, 18°C, 24°C, 30°C, and 35°C. However, low temperature prolonged the duration of growing time. Symbiotic bacteria were pathogenic at all given temperature, 13°C, 18°C, 24°C, 30°C, and 35°C. *X. poinarii* was less virulent than and *X. beddingii*. Lethal time for symbiotic bacteria also increased with decreasing temperatures. Lethal time for nematodes was longer than that for symbiotic bacteria in *G. mellonella* larvae. Temperature range for nematode reproduction was narrower than that for bacterial growth.