B4

Immune Stimulation in the Silkworm, *Bombyx mori* L., by CpG Oligodeoxynucleotides

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Synthetic oligodeoxynucleotides (ODNs) containing unmethylated CpG dinucleotides are known to stimulate immune responses in vertebrates, but so far the effect in insects has not been examined. In this study, the fifth instar silkworm (*Bombyx mori* L.) larvae were injected with several synthetic CpG ODNs containing variable number of unmethylated CpG motifs to further understand the immune stimulatory pattern in insects. When the induction of immune response was assessed according to the expression of antibacterial peptides, attacin and cecropin, we could confirm that it was obviously triggered by ODN injection. The expression was however neither dependent on numbers of CpG motifs nor methylation of CpGs in ODNs. While the injection of denatured genomic DNA of *B. mori* itself could provoke the immune reaction, the injection of intact genomic DNA was not influenced on the host defense system. This further demonstrated that CpG dinucleotide is not requirement for immune stimulation in silkworm. Instead, mere injection of single-stranded DNA was able to induce immune response. Taken these data together, although vertebrates respond to CpG dinucleotides in a specific manner, the presence of CpG in ODN may not be the prerequisite for the induction of immunity in insects.