



INTISARI

Ostrinia furnacalis merupakan salah satu hama yang menyebabkan kerusakan pada tanaman jagung. *Bacillus thuringiensis* adalah bakteri gram positif yang menghasilkan protein seperti Cry1Ac dan Cry1F yang beracun bagi hama Lepidoptera seperti *O. furnacalis*. Toksisitas dan efek kronis protein *B. thuringiensis* telah dilaporkan pada beberapa jenis hama serangga. Penelitian ini bertujuan untuk mengetahui pengaruh protein Cry1Ac dan Cry1F terhadap pertumbuhan dan perkembangan *O. furnacalis* meliputi mortalitas, berat larva, periode larva, periode pupa, berat pupa, keberhasilan dan kegagalan larva menjadi imago. Pada uji toksisitas, penelitian ini menggunakan Rancangan Acak Lengkap (RAL) dengan 5 konsentrasi Cry1Ac (0 ppm, 0,00294 ppm, 0,0294 ppm, 0,294 ppm, dan 2,94 ppm) dan Cry1F (0%, 0,00017%, 0,0017%, 0,017%, dan 0,17%). Pada uji efek kronis, hanya tiga perlakuan yang diuji untuk toksin Cry1Ac (0 ppm, 0,00294 ppm, dan 0,0294 ppm) dan Cry1F (0%, 0,00017%, dan 0,0017%). Pada uji toksisitas, mortalitas larva meningkat seiring dengan meningkatnya konsentrasi toksin dengan mortalitas tertinggi (100% dan 91,7%) terjadi pada konsentrasi 2,94 ppm dan 0,17% masing-masing untuk Cry1Ac dan Cry1F. Aplikasi konsentrasi sublethal Cry1Ac dan Cry1F menghambat pertumbuhan dan perkembangan larva *O. furnacalis* dengan memperpanjang tahap larva dan pupa, mengurangi berat pupa dan meningkatkan terjadinya kelainan pupa dan imago. Penelitian ini menunjukkan bahwa protein Cry1Ac dan Cry1F memiliki potensi untuk mengelola *O. furnacalis*.

Kata kunci : *Bacillus thuringiensis*, Cry1Ac, Cry1F, *Ostrinia furnacalis*, toksisitas, efek kronis.



ABSTRACT

Ostrinia furnacalis is a pest that causes damage to corn plants. *Bacillus thuringiensis* is a gram-positive bacterium that produces proteins such as Cry1Ac and Cry1F which are toxic to Lepidopteran pests such as *O. furnacalis*. Toxicity and chronic effects of *B. thuringiensis* protein have been reported on several types of insect pests. This study aimed to determine the effect of Cry1Ac and Cry1F proteins on growth and development of *O. furnacalis* including mortality, larval weight, larval period, pupal period, pupal weight, success and failure of larvae become adults. In the toxicity test, this study used a completely randomized design (CRD) with 5 concentrations of Cry1Ac (0 ppm, 0,00294 ppm, 0,0294 ppm, 0,294 ppm, and 2,94 ppm) and Cry1F (0%, 0,00017%, 0,0017%, 0,017%, and 0,17%) toxins. In the chronic effect test, only three treatments were tested for Cry1Ac (0 ppm, 0,00294 ppm, and 0,0294) and Cry1F (0%, 0,00017%, and 0,0017%) toxins. In the toxicity test, the larval mortality increased with increasing the concentrations of the proteins with the highest mortality (100% and 91,7%) happened at the concentration of 2,94 ppm and 0,17% for Cry1Ac and Cry1F, respectively. Applications of the sublethal concentrations of Cry1Ac and Cry1F inhibited the growth and development of *O. furnacalis* larvae by extending the larval and pupal stages, reducing the weight of the pupae and increasing the occurrence of pupal and imago abnormalities. These findings suggest that both Cry1Ac and Cry1F proteins have the potency for managing *O. furnacalis*.

Key words : *Bacillus thuringiensis*, Cry1Ac, Cry1F, *Ostrinia furnacalis*, toxicity, chronic effect.