

**Efektivitas Ekstrak Air dan Etanol Daun Berenuk (*Crescentia cujete* L.)
sebagai Insektisida Nabati terhadap Mortalitas Larva Penggerek Tongkol
Jagung (*Helicoverpa armigera* (Hübner) Hardwick)**

Tri Nette Thalia
(19/441327/BI/10319)

Dosen pembimbing: Dr. Siti Sumarmi

INTISARI

Larva *Helicoverpa armigera* merupakan salah satu serangga hama tanaman pangan di Indonesia. Pengendalian larva *H. armigera* secara hayati dapat menggunakan insektisida nabati yang berbahan aktif dari ekstrak tumbuhan. Tujuan penelitian ini adalah mengetahui efek letal dan subletal ekstrak air dan etanol daun *C. cujete* terhadap larva *H. armigera* instar kedua dan keempat. Larva *H. armigera* diperoleh dari perkebunan tomat Dusun Kalipakel, Donotirto, Kecamatan Kretek, Kabupaten Bantul, D. I. Yogyakarta. Pemeliharaan larva *H. armigera* dilakukan dengan pakan buatan di Laboratorium Entomologi, Fakultas Biologi, Universitas Gadjah Mada. Uji ekstrak air dan etanol daun *C. cujete* terhadap mortalitas larva instar kedua dan keempat dilakukan dengan metode Rancangan Acak Lengkap dan metode rendam pakan buatan ke dalam ekstrak uji. Konsentrasi larutan uji yang digunakan yaitu 2%, 4%, 6%, dan 8% v/v (ekstrak/akuades). Pengamatan mortalitas larva uji dilakukan pada 24, 48, dan 72 jam setelah uji. Pengamatan efek subletal dilakukan sampai perkembangan larva mencapai imago. Data hasil uji mortalitas dari pengamatan efek letal, serta data durasi larva dan berat pupa dari pengamatan efek subletal dianalisis dengan ANOVA dan *Duncan Multiple Test* (DMRT) untuk mengetahui perbedaan empat perlakuan. Hasil uji mortalitas menunjukkan bahwa kematian larva *H. armigera* instar kedua pada 24 dan 72 jam ditemukan kematian 3,33% dan 6,67% di kedua ekstrak uji, namun pada instar keempat tidak ditemukan adanya kematian. Pada pengamatan efek subletal durasi larva dan berat pupa juga tidak menunjukkan hasil yang signifikan, tetapi menyebabkan tidak terbentuknya sebagian integumen pada pupa dan jumlah sayap imago hanya satu pasang. Simpulan dari penelitian ini adalah ekstrak air dan etanol daun *C. cujete* tidak efektif untuk membunuh *H. armigera* instar kedua dan keempat, tetapi mempunyai efek subletal terhadap perkembangan larva sampai imago.

Kata Kunci: *Crescentia cujete*, *Helicoverpa armigera*, insektisida nabati

**Effectiveness of Water and Ethanol Extracts of Calabash Leaves
(*Crescentia cujete* L.) as a Botanical Insecticide on the Mortality of Corn cob
Borer Larvae (*Helicoverpa armigera* (Hübner) Hardwick)**

**Tri Nette Thalia
(19/441327/BI/10319)**

Supervisor: Dr. Siti Sumarmi

ABSTRACT

Helicoverpa armigera larvae are one of the insect pests of food crops in Indonesia. Biological control of *H. armigera* larvae can be use as botanical insecticides with active ingredients from plant extracts. The aim of this study was to determine the lethal and sub-lethal effects of the water and ethanol extracts of *C. cujete* leaves on the second and fourth instar *H. armigera* larvae. *H. armigera* larvae were obtained from a tomato farm in Kalipakel, Donotirto, Kretek, Bantul Regency, Special Region of Yogyakarta. *H. armigera* larvae rearing was carried out by using artificial diet at the Entomology Laboratory, Faculty of Biology, University of Gadjah Mada. Mortality test of water and ethanol extract *C. cujete* leave to the second and fourth larvae using Completely Randomized Design and soak method. The concentrations of the water and ethanol extract test solutions of *C. cujete* leaves used were 2%, 4%, 6%, and 8%. Observation of the mortality of the test larvae was conducted at 24, 48, and 72 hours after treatment. Observation of sublethal effects was carried out until the development of the larvae reached the adult. The result of mortality data was analyzed by ANOVA and Duncan's Multiple Test (DMRT) method to see the difference those treatments. The results of the mortality tests showed no significant mortality of *H. armigera* larvae in all treatments. The duration of larvae and pupal weight from the observations of sublethal effects also did not show significant results. The results of mortality tests showed at 24 and 72 hours the percentage of mortality for the second instar *H. armigera* larvae was 3.33% and 6.67% respectively, however for the fourth instar larvae were not effective. The sub-lethal effect of larvae duration and pupae weight also showed no significant, but integument of pupae was not being formed and only one pair of wings of the adults. It was concluded that the water and ethanol extracts of *C. cujete* leaves were not effective in killing second and fourth instar *H. armigera*, but had a sublethal effect on the development of larvae to adult.

Keywords: *Crescentia cujete*, *Helicoverpa armigera*, botanical insecticide