

**EFEKTIVITAS SERISIN KOKON ATAKAS (*Attacus atlas* Linnaeus, 1758)  
SEBAGAI PROTEKTAN *Metarhizium anisopliae* (Metch) Sorokin.  
AGENSIA PENGENDALI ULAT GRAYAK (*Spodoptera litura* Fabricius,  
1775) TERHADAP SINAR UV-B**

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**INTISARI**

Ulat grayak (*Spodoptera litura* Fab.) adalah serangga hama penting di bidang pertanian di Indonesia. Pengendalian larva *S. litura* yang sering dilakukan adalah menggunakan pestisida sintetis. Penggunaan pestisida sintetis tidak tepat menyebabkan kerugian seperti akumulasi residu racun dan kematian serangga bukan target. Salah satu solusi untuk permasalahan tersebut adalah penggunaan biopestisida (pestisida biologi) antara lain *Metarhizium anisopliae*, yaitu jamur entomopatogenik. *M. anisopliae* memiliki kekurangan yaitu mudah terdegradasi oleh ultraviolet B (UV-B). Sehingga diperlukan pemberian protektan untuk meningkatkan persistensinya terhadap sinar UV-B. Protektan yang digunakan pada penelitian ini adalah *serisin* yang berasal dari kokon ngengat Atakas (*Attacus atlas* L.). Senyawa *serisin* melindungi *M. anisopliae* dari UV-B karena bersifat antioksidan dan menyerap sinar UV-B. Tujuan penelitian ini adalah memperoleh ekstrak *serisin* sebagai senyawa protektan *M. anisopliae* terhadap paparan sinar UV-B dan mengukur patogenisitasnya dengan menentukan nilai  $LC_{50}$  terhadap larva *S. litura* instar kedua dan ketiga. Penelitian meliputi pemeliharaan *S. litura*, ekstraksi dan karakterisasi protein *serisin*, inokulasi *M. anisopliae* pada medium *Potato Dextrose Agar* (PDA), serta uji persistensi dan patogenisitas *M. anisopliae* persisten UV-B terhadap larva *S. litura*. Penelitian dilakukan di Laboratorium Entomologi dan Fasilitas Penelitian Bersama (FALITMA) Fakultas Biologi UGM. Hasil pemeliharaan *S. litura* menggunakan resep Shorey dan Hale berupa perbandingan morfometri dan pengamatan *life table* menunjukkan hasil yang baik yaitu pertumbuhan populasi dengan nilai *Gross Reproduction Rate* ( $R_0$ ) > 1. Karakterisasi morfologi *M. anisopliae* menunjukkan ciri khas konidia hijau pekat dengan percabangan *candelabrum*. Uji persistensi menunjukkan perlakuan terbaik pada paparan 12 jam UV-B dengan perendaman 2,5% *serisin*. Uji patogenisitas *M. anisopliae* persisten UV-B terhadap larva instar kedua dan ketiga *S. litura* menunjukkan instar kedua lebih rentan daripada instar ketiga dengan nilai  $LC_{50}$  berturut-turut sebesar  $5 \times 10^4$  konidia/ml dan  $3,6 \times 10^5$  konidia/ml. *M. anisopliae* persisten UV-B menunjukkan efek sub-lethal dengan efek pertumbuhan dan perkembangan tidak normal. Disimpulkan, *serisin* bisa digunakan sebagai senyawa protektan *M. anisopliae* terhadap sinar UV-B dan *M. anisopliae* persisten UV-B bersifat patogen terhadap *S. litura*.

Kata Kunci: *Attacus atlas*, *Spodoptera litura*, ulat grayak, *serisin*, biopestisida, protektan, UV-B.

**EFFECTIVENESS OF ATLAS MOTH (*Attacus atlas* Linnaeus, 1758)  
COCOON'S SERICIN AS *Metarhizium anisopliae* (Metch) Sorokin  
PROTECTANT AGAINST UV-B TO CONTROL ARMY WORM  
(*Spodoptera litura* Fabricius, 1775)**

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**ABSTRACT**

Armyworm (*Spodoptera litura* Fab.) is an important insect pest in agriculture in Indonesia. The controls of *S. litura* larvae have been done by using synthetic pesticides. Improper use of synthetic pesticides causes losses such as accumulation of toxic residues and death of non-target insects. One of solution to this problems is the use of biopesticides, including *Metarhizium anisopliae*, an entomopathogenic fungus. However, *M. anisopliae* has disadvantage that it is easily degraded by ultraviolet B (UV-B). Therefore, it is necessary to provide a protection to increase its persistence against UV-B. The protector used in this study was sericin derived from the cocoon of the Atlas moth (*Attacus atlas* L.). Sericin compounds may protect *M. anisopliae* from UV-B because it contains antioxidants and will absorbs UV-B rays. The purpose of this study was to obtain sericin extract as a protective compound for *M. anisopliae* against UV-B exposure and to measure the fungus pathogenicity by determining the LC<sub>50</sub> value for the second and third instar *S. litura* larvae. The research included maintenance of *S. litura*, extraction and characterization of sericin protein, inoculation of *M. anisopliae* on Potato Dextrose Agar (PDA) medium, as well as testing for the persistence and pathogenicity of UV-B persistent *M. anisopliae* against *S. litura* larvae. The research was conducted at the Entomology Laboratory and Joint Research Facility (FALITMA) Faculty of Biology UGM. The results of rearing *S. litura* using artificial diet from Shorey and Hale's prescription in the form of morphometric comparisons and vertical life table observations showed good results with an increase in population growth with a Gross Reproduction Rate (R<sub>0</sub>)>1. Morphological characterization of *M. anisopliae* showed characteristic dark green conidia with candelabrum branching. Persistence tests showed the best treatment at 12 hours UV-B exposure with 2.5% sericin immersion. Pathogenicity tests of UV-B persistents *M. anisopliae* on second and third instar larvae of *S. litura* showed that the second instar was more susceptible than the third instar with LC<sub>50</sub> values of 5 x 10<sup>4</sup> conidia/ml and 3.6 x 10<sup>5</sup> conidia/ml, respectively. UV-B persistent *M. anisopliae* showed a sub-lethal effect on the second and third instar larvae of *S. litura* with abnormal growth and development effects. The conclusion of this research was sericin can be used as protectant of *M. anisopliae* against UV-B and pathogenic to the second and third instar larvae of *S. litura*.

**Keywords:** *Attacus atlas*, *Spodoptera litura*, armyworm, sericin, biopesticides, protectant, UV-B.