

ABSTRAK

Pengendalian Hama Terpadu (PHT) merupakan upaya pengendalian hama dengan menggunakan perpaduan beberapa cara seperti fisik, kimiawi, dan biologis. Penggunaan jamur entomopatogen merupakan pengendalian hama secara biologis dengan memanfaatkan agen hayati. Pada penelitian ini akan dilakukan isolasi dan identifikasi jamur entomopatogen yang dapat menghasilkan enzim kitinase sebagai bioinsektisida pengendali serangga hama. Penelitian ini dilakukan menggunakan metode deskriptif yang bertujuan untuk mengetahui dan menganalisis kadar enzim kitinase yang terdapat pada jamur entomopatogen yang berhasil diisolasi. Isolasi jamur entomopatogen dilakukan dengan menggunakan perangkat larva ulat hongkong *Tenebrio molitor*. Jamur entomopatogen yang berhasil diisolasi diantaranya adalah *Beauveria bassiana*, *Trichoderma koningii*, dan *Aspergillus niger*. Jamur hasil isolasi diaplikasikan kembali pada jangkrik *Gryllus sp* sebagai serangga hama sumber kitin. Isolat jamur entomopatogen diinokulasikan pada media kitin cair untuk mendeteksi keberadaan enzim kitinase. Berdasarkan penelitian yang sudah dilakukan didapatkan hasil bahwa ketiga jamur hasil isolasi terbukti dapat menghasilkan enzim kitinase, hal ini terlihat pada tahap kultur media kitin cair. Media kitin cair mengandung nutrisi minimum yaitu kolodial kitin sebagai sumber energi utama jamur. Enzim kitinase dapat membantu jamur dalam menguraikan kitin yang terdapat pada media. Aktivitas kitinase terlihat dengan adanya pertumbuhan jamur hasil isolasi. Ekstrak enzim kitinase kasar hasil isolasi yang dihitung dengan menggunakan metode *Bradford* (1968) menunjukkan bahwa isolat *Trichoderma koningii* menghasilkan enzim kitinase tertinggi sebesar 0,112 mg/ml. Sedangkan hasil uji mortalitas serangga hama tertinggi pada isolat *Aspergillus niger*. Kesimpulan menunjukkan bahwa kitinase bukan salah satu penyebab kematian pada serangga hama, sehingga perlu dilakukan eksplorasi lebih lanjut terkait zat-zat yang dihasilkan oleh jamur entomopatogen sebagai bioinsektisida.

Kata Kunci: Kitinase, Jamur Entomopatogen, Pengendalian Hama Terpadu, *Beauveria bassiana*, *Trichoderma koningii*, *Aspergillus niger*.

ABSTRACT

Integrated pest management (IPM) is an effort to control pests by using a combination of several methods such as physical, chemical and biological. The use of entomopathogenic fungi is a biological pest control by utilizing biological agents. In this study isolation and identification of entomopathogenic fungi that can produce chitinase enzymes will be carried out as bioinsecticides for insect pest control. This research was conducted using a descriptive method that aims to determine and analyze the levels of chitinase enzymes found in entomopathogenic fungi that were successfully isolated. Isolation of entomopathogenic fungi was carried out by using traps of *Tenebrio molitor* caterpillar larvae. Entomopathogenic fungi that were isolated were *Beauveria bassiana*, *Trichoderma koningii*, and *Aspergillus niger*. Isolated fungi were applied again to *Gryllus* sp crickets as chitin insect sources from chitin. Entomopathogenic fungal isolates were inoculated in liquid chitin media to detect the presence of chitinase enzymes. Based on the research that has been done, it was found that the three isolation fungi were proven to produce chitinase enzymes, this was seen in the stage of liquid chitin media culture. Liquid chitin media contains minimum nutrients, namely chitin chitinal as the main energy source for fungi. Chitinase enzyme can help fungi in describing chitin contained in the media. Chitinase activity was seen by the growth of isolated fungi. Extracts of coarse chitinase enzymes isolated from the method calculated by Bradford (1968) showed that *Trichoderma koningii* isolates produced the highest chitinase enzyme of 0.112 mg / ml. While the results of the mortality test for pest insects are highest in *Aspergillus niger* isolates. The conclusion shows that chitinase is not one of the causes of death in insect pests, so it is necessary to do further exploration related to substances produced by entomopathogenic fungi as bioinsecticides.

Keywords: *Chitinase, Entomopathogenic fungus, Integrated Pest Control, Beauveria bassiana, Trichoderma koningii, Aspergillus niger.*