ISOLATION AND DETERMINATION OF CELLULASE ENZYME ACTIVITY FROM WASTE PLANTING (BAGLOG) OF KING OYSTER MUSHROOM *(Pleurotus eryngii)*

ABSTRACT

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Cellulase enzyme is one of the enzymes that are widely used in the processing of industrial waste into glucose. Production in general usually use fungi or bacteria that have been isolated. In this study aims to determine the activity of cellulase enzyme from the media waste of King Oyster mushroom plant which still has high lignin and cellulose content. Cellulase enzyme is one of the extracellular enzymes that work outside the cell and can then be released to the growing medium of the fungus. Determination of enzyme activity is done by isolation of enzyme from waste media planting King Oyster fungus, enzyme purification, and cellulase enzyme activity test. Isolation of the enzyme was carried out by addition of phosphate buffer pH 5.5 for the process of obtaining the enzyme through incubation 10 hours later filtration for the centrifugation method in enzyme separation from the mixed cell. Cellulase enzyme purification is done by 0-90% concentration fractionation method using ammonium sulphate. Testing of cellulase enzyme activity is done by counting from the amount of reducing sugar capable of cellulase enzyme using Nelson-Somogyi method. Based on the result of research known cellulase enzyme activity is 0,022 U/mL. This shows that the waste media planting fungus King Oyster can produce enzyme cellulase with high enzyme activity value.

Keywords: *King Oyster*, cellulase enzyme, cellulase enzyme activity

ISOLASI DAN UJI AKTIVITAS ENZIM SELULASE DARI LIMBAH MEDIA TANAM (BAGLOG) KING OYSTER MUSHROOM *(Pleurotus eryngii)*

INTISARI

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Enzim selulase merupakan salah satu enzim yang banyak digunakan dalam pengolahan limbah industri berselulosa menjadi glukosa. Produksi secara umum biasanya menggunakan jamur atau bakteri yang telah dilakukan isolasi. Enzim selulase termasuk enzim ekstraseluler yang bekerja di luar sel dan dapat dikeluarkan ke media tumbuh jamur. Pada penelitian ini bertujuan untuk mengetahui aktivitas enzim selulase dari limbah media tanam jamur *King Oyster* yang masih memiliki kandungan lignin dan selulosa tinggi. Penentuan aktivitas enzim dilakukan dengan cara isolasi enzim, pemurnian, dan uji aktivitas enzim. Isolasi enzim dilakukan menggunakan metode sentrifugasi dengan penambahan larutan buffer fosfat pH 5,5 untuk proses mendapatkan enzim. Pemurnian enzim menggunakan metode fraksinasi berkonsentrasi 0-90 % dengan ammonium sulfat dan dialisis. Penentuan aktivitas enzim selulase dihitung dari banyaknya gula pereduksi yang dihasilkan oleh enzim selulase menggunakan metode Nelson-Somogyi. Berdasarkan hasil penelitian diketahui aktivitas enzim selulase sebesar 0,022 U/mL. Hal tersebut menunjukkan bahwa limbah media tanam jamur *King Oyster* dapat memproduksi enzim selulase dengan aktivitas enzim yang cukup tinggi.

Kata kunci : *King Oyster*, Enzim selulase, aktivitas enzim selulase