

Rusydina Ayu Triastika, 2015. Hidrolisis Enzimatis Ampas Tebu oleh *Penicillium* sp. H9 pada Variasi pH dan Suhu. Skripsi ini di bawah bimbingan Dr. Ni'matuzahroh dan Tri Nurhariyati, S. Si., M. Kes. Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh pH, suhu dan kombinasi keduanya terhadap konsentrasi glukosa hasil hidrolisis enzimatis ampas tebu oleh *Penicillium* sp. H9 pada waktu inkubasi optimum. Waktu inkubasi optimum menggunakan rancangan acak lengkap yang terdiri atas tujuh perlakuan (1, 2, 3, 4, 5, 6 dan 7 hari) dengan tiga kali ulangan. Pengaruh pH, suhu dan kombinasi keduanya menggunakan rancangan faktorial 4x6 yang terdiri atas 24 perlakuan (kombinasi suhu 30, 35, 40, 45 °C dan pH 4; 4,5; 5; 5,5; 6; 6,5) dengan dua kali ulangan. Konsentrasi glukosa diukur dengan metode 3,5-dinitrosalicylic acid (DNS). Data konsentrasi glukosa hasil perlakuan waktu inkubasi dianalisis secara deskriptif. Data konsentrasi glukosa hasil perlakuan pH, suhu dan kombinasi keduanya dianalisis dengan uji *Kruskal-Wallis* dan dilanjutkan dengan uji *Mann-Whitney*. Hasil penelitian ini menunjukkan bahwa hidrolisis enzimatis ampas tebu oleh *Penicillium* sp. H9 membutuhkan waktu inkubasi optimum selama tiga hari dengan konsentrasi glukosa 194,87 µg/mL; konsentrasi glukosa hasil hidrolisis enzimatis ampas tebu oleh *Penicillium* sp. H9 tidak dipengaruhi pH; konsentrasi glukosa hasil hidrolisis enzimatis ampas tebu oleh *Penicillium* sp. H9 tidak dipengaruhi suhu; konsentrasi glukosa hasil hidrolisis enzimatis ampas tebu oleh *Penicillium* sp. H9 dipengaruhi kombinasi antara pH dan suhu dengan konsentrasi glukosa 72,08 µg/mL pada kombinasi pH 6,5 dan suhu 35 °C.

Kata kunci: hidrolisis enzimatis, ampas tebu, *Penicillium* sp. H9, pH dan suhu, konsentrasi glukosa

Rusydina Ayu Triastika, 2015. Enzymatic Hydrolysis of Bagasse by *Penicillium* sp. H9 on Variation of pH and Temperature. This thesis under the guidance of Dr. Ni'matuzahroh and Tri Nurhariyati, S. Si., M. Kes. Department of Biology, Faculty of Science and Technology, Airlangga University, Surabaya.

ABSTRACT

*This research aimed to determine the effect of pH, temperature and both combination on the glucose concentration from enzymatic hydrolysis of bagasse by *Penicillium* sp. H9 at optimum incubation time. The optimum incubation time was known by completely randomized design in seven treatments (1, 2, 3, 4, 5, 6 and 7 days) with three replications. The effect of pH, temperature and both were known by 4x6 factorial design in 24 treatments (combination of temperature 30, 35, 40, 45 °C and pH 4; 4,5; 5; 5,5; 6; 6,5) with two replications. The glucose concentrations were measured by 3,5-dinitrosalicylic acid (DNS) method. Data of the glucose concentration from the incubation time treatments were analyzed descriptively. Data of the glucose concentration from the pH, temperature and both combination treatments were analyzed by Kruskal-Wallis and continued by Mann-Whitney test. The results of this research showed that enzymatic hydrolysis of bagasse by *Penicillium* sp. H9 required three days for optimum incubation time with glucose concentration was 194,87 µg/mL; glucose concentrations from enzymatic hydrolysis of bagasse by *Penicillium* sp. H9 had no effect by pH; glucose concentrations from enzymatic hydrolysis of bagasse by *Penicillium* sp. H9 had no effect by temperature; glucose concentrations from enzymatic hydrolysis of bagasse by *Penicillium* sp. H9 were effected by combination between pH and temperature with optimum glucose concentration was 72,08 µg/mL at pH 6,5 and temperature 35 °C.*

*Keywords: enzymatic hydrolysis, bagasse, *Penicillium* sp. H9, pH and temperature, glucose concentration*