

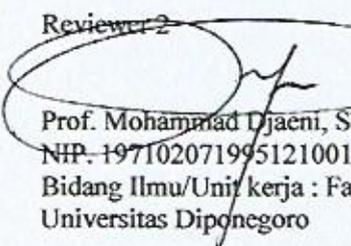
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Judul Jurnal Ilmiah (Artikel) : Kinetics of the Hydrolysis of Cassava Starch by Glucoamylase and a Granular Starch Hydrolyzing Enzyme  
 Nama Penulis : **Hargono Hargono**, Bakti Jos, Andri Cahyo Kumoro  
 Jumlah Penulis : 3 Orang  
 Status Pengusul : **Penulis Pertama**  
 Identitas Jurnal Ilmiah : Nama Jurnal : Scientific Study & Research Chemistry & Chemical Engineering, Biotechnology, Food Industry  
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 b. Volume, Nomor, Bulan, Tahun : 19/ 4/Desember 2018  
 c. Penerbit : University of Bacau  
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 e. Alamat URL Jurnal :  
 f. Alamat URL Artikel  
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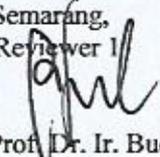
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 Bidang Ilmu/ Unit Kerja : Fakultas Teknik  
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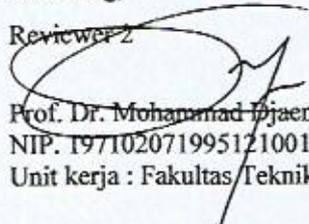
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Volume 19, Issue 4, 2018, Pages 443-454

## Kinetics of the hydrolysis of cassava starch by glucoamylase and a granular starch hydrolyzing enzyme (Article)

Hargono, H. [✉](#), Jos, B., Kumoro, A.C. [👤](#)

Diponegoro University, Faculty of Engineering, Department of Chemical Engineering, Jl. Prof. H. Soedarto, S.H., Semarang, 50275, Indonesia

### Abstract

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Kinetic studies of the enzymatic hydrolysis of cassava starch have been carried out using glucoamylase and granular starch hydrolyzing enzyme (GSHE) as Stargen™ 002. The enzymatic hydrolysis of cassava starch was conducted at pH 4 by employing slurry concentrations of 25-300 g·L<sup>-1</sup>, temperatures 30-60 °C and 0.5-1.5 % (w/w) of enzymes glucoamylase and Stargen™ 002. Higher temperatures accelerated the enzymatic reaction using glucoamylase, while the similar effect levelled off at 40 °C for hydrolysis using Stargen™ 002. The cassava starch concentrations of 200 and 250 g·L<sup>-1</sup> were found as the critical substrate concentrations for lower (glucoamylase 0.5 and 1 %) and higher (glucoamylase 1.5 %) enzyme concentrations used, respectively. Based on the Lineweaver-Burk plot for cassava starch hydrolysis using glucoamylase, the maximum reaction rates,  $V_{max}$  for 0.5, 1.0 and 1.5 % (w/w) glucoamylase were 3.55, 5.78 and 9 g·L<sup>-1</sup>·h<sup>-1</sup>, while the Michaelis-Menten constants,  $K_m$  were 140.35, 140.75 and 152.10 g·L<sup>-1</sup>. Accordingly, the maximum reaction rates,  $V_{max}$  for 0.5, 1 and 1.5 % (w/w) of Stargen™ 002 were 7.19, 11.6 and 18.18 g·L<sup>-1</sup>·h<sup>-1</sup>, respectively. While the Michaelis-Menten constants,  $K_m$  obtained at those enzyme concentrations were respectively 160.86, 161.31 and 160.85 g·L<sup>-1</sup>. It is an indication that the rate of starch hydrolysis using Stargen™ 002 is faster than glucoamylase. © 2018 ALMA MATER Publishing House, "VASILE ALECSANDRI" University of Bacău. All rights reserved.

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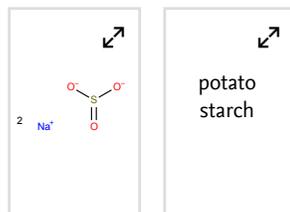
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👤 Hargono, H.; Diponegoro University, Faculty of Engineering, Department of Chemical Engineering, Jl. Prof. H. Soedarto, S.H., Semarang, Indonesia; email:hargono@che.undip.ac.id

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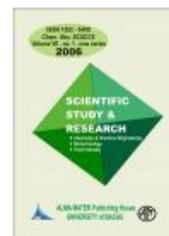
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