

## Accepted Manuscript

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PII: S0141-0229(18)30198-4  
DOI: <https://doi.org/10.1016/j.enzmictec.2018.05.014>  
Reference: EMT 9222

To appear in: *Enzyme and Microbial Technology*

Received date: 25-1-2018  
Revised date: 16-5-2018  
Accepted date: 25-5-2018

Please cite this article as: Ueda Mitsuhiro, Hirano Yu, Fukuhara Hiroaki, Naka Yuki, Nakazawa Masami, Sakamoto Tatsuji, Ogata Yoshiyuki, Tamada Taro. Gene cloning, expression, and X-ray crystallographic analysis of a  $\beta$ -mannanase from *Eisenia fetida*. *Enzyme and Microbial Technology* (2018), <https://doi.org/10.1016/j.enzmictec.2018.05.014>

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## Gene cloning, expression, and X-ray crystallographic analysis of a $\beta$ -mannanase from *Eisenia fetida*

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### Highlights

- The first report of cloning, expression and X-ray crystallographic analysis of a  $\beta$ -mannanase from *Eisenia fetida*.
- The amino acid sequence of Ef-Man showed similarity with endo-1,4-  $\beta$  -mannanases from invertebrate.
- The Ef-Man gene was expressed in *Pichia pastoris*.
- Ef-Man requires at least six subsites for efficient hydrolysis
- Overall structure of recombinant Ef-Man is similar to those of GH5 family proteins.

### ABSTRACT

The Ef-Man gene was determined to consist of 1131 bp and encode a 377 amino acid protein. The amino acid sequence showed similarity with the endo-1,4- $\beta$ -mannanases of *Daphnia pulex* (62%), *Cryptopygus antarcticus* (64%), *Crassostrea gigas* (61%),

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