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Review

Improvement of cellulolytic enzyme production and performance by rational designing expression regulatory network and enzyme system composition

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1 **Improvement of cellulolytic enzyme production and performance by rational**
2 **designing expression regulatory network and enzyme system composition**

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10 **HIGHLIGHTS**

- 11 1. Industrial lignocellulolytic enzyme hyper-producing strains are urgently required.
- 12 2. *Penicillium oxalicum* is a promising strain expressing lignocellulolytic enzymes.
- 13 3. Synergistic and cascade regulation for lignocellulolytic genes is discussed.
- 14 4. Strategies for the metabolic engineering of *P. oxalicum* via the reconstruction of
- 15 expression regulation network are reviewed.

16 **Abstract**

17 Filamentous fungi are considered as the most efficient producers expressing
18 lignocellulose-degrading enzymes. *Penicillium oxalicum* strains possess extraordinary
19 fungal lignocellulolytic enzyme systems and can efficiently utilize plant biomass. In
20 recent years, the regulatory aspects of production of hydrolytic enzymes by *P. oxalicum*

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