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Improvement of a gene targeting system for genetic manipulation in *Penicillium digitatum*

柑橘绿霉病菌基因敲除体系的改进

Key words: ***Penicillium digitatum***, **Efficiency, Gene targeting, Non-homologous end-joining (NHEJ) pathway, Ku80**

关键词：柑橘绿霉病菌；效率；基因敲除；非同源末端连接**(NHEJ)**途径； **Ku80**

Background

1. *Penicillium digitatum* is the most destructive pathogen in the citrus industry, however, to date a limited amount of information regarding the molecular mechanisms of pathogenesis is available for this important pathogen.
2. Targeted gene knockout/replacement is an efficient and essential strategy for the functional characterization of pathogenesis associated genes in filamentous fungi.
3. However, the gene knockout fequency of the available system is very low (<4%) or even negligible. This situation greatly hampered the functional characterization of interested genes in *P. digitatum*.
4. Previous studies indicated that destroying the non-homologous end-joining (NHEJ) machinery by disrupting the Ku70- or Ku80-coding gene could increase the gene-targeting frequency in a number of filamentous fungi.
5. The objective of this study was to improve the gene-targeting frequency by deleting the Ku80 in *P. digitatum*.

Strategy and Results