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Improvement of neutral protease activity of *Bacillus amyloliquefaciens* LX-6 by combined ribosome engineering and medium optimization and its application in soybean meal fermentation

Key words: *Bacillus amyloliquefaciens*, Ribosome engineering, Fermentation optimization, Neutral protease, Soybean meal

Research Plan

This correspondence mainly focused on improving the neutral protease activity of *Bacillus amyloliquefaciens* LX-6 which used for soybean meal (SBM) fermentation

ribosome engineering

and

medium optimization

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graph TD; A[ribosome engineering and medium optimization] --> B((Bacillus amyloliquefaciens LX-6)); B --> C[higher neutral protease activity]; C --> D[application for soybean meal fermentation];
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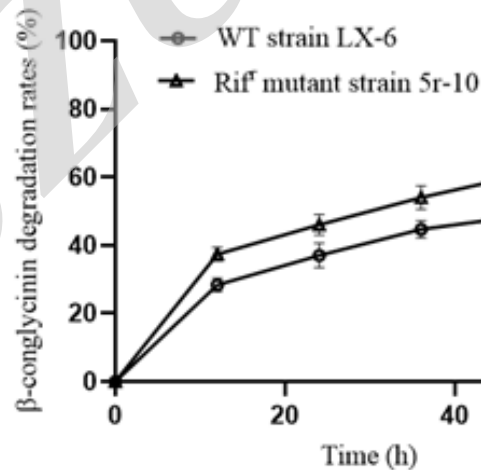
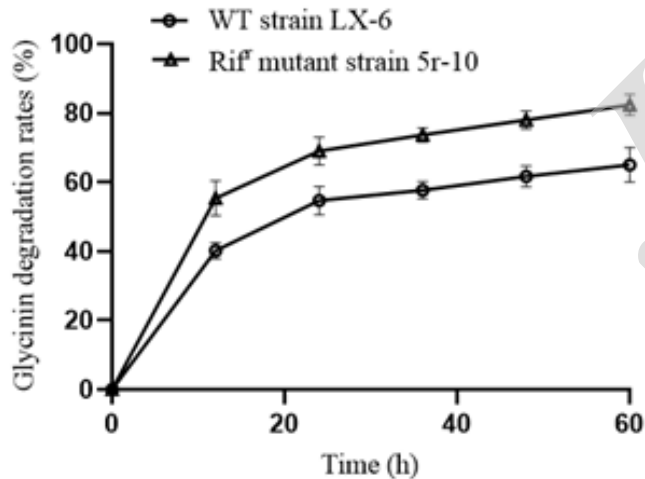
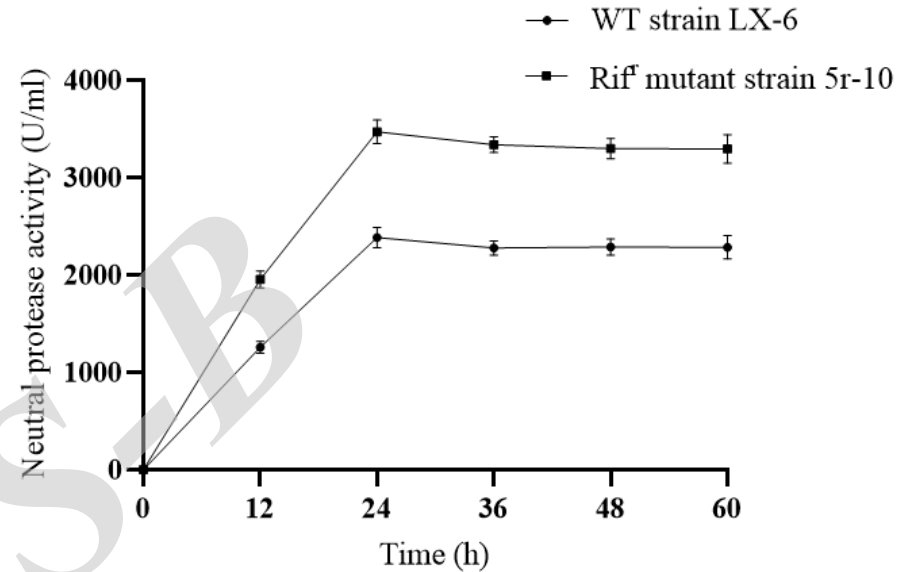
Bacillus amyloliquefaciens LX-6

higher neutral protease activity

application for soybean meal fermentation

Results

✓ The spontaneous rifamycin-resistant (Rif^r) mutant named 5r-10 has higher neutral protease activity in optimized medium, which is 1.49 times higher than that produced by the WT strain LX-6 in the original medium.



✓ The degradation rates of glycinin and β-conglycinin in SBM significantly increased after fermentation with 5r-10

Innovation points

- **A mutant 5r-10 strain with higher neutral protease activity was yielded and screened by using ribosome engineering technology**
- **Medium optimization by response surface methodology to improve neutral protease production of mutant 5r-10 that used for SBM fermentation**