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Hemoglobin from the blood clam *Tegillarca granosa* (Tg-HbIIA, Tg-HbIIB): Expression and antibacterial activity of recombinant proteins**Yongbo Bao and Danli Song**
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The hemoglobins produced by *Tegillarca granosa* have antibacterial activity toward some Gram-positive and Gram-negative bacteria. In this study, the genes encoding the recombinant proteins Tg-HbIIA and Tg-HbIIB were cloned from *T. granosa* hemocytes by RT-PCR, and the proteins were expressed in *Escherichia coli* Transetta (DE3). The proteins were purified using a HisTrap FF affinity chromatography column under denaturing conditions and refolded at 4 °C by urea gradient dialysis, and the antibacterial activity of the recombinant proteins was determined. The Tg-HbIIA protein had antibacterial activity toward *Vibrio harveyi* and *Pseudomonas putida*, with the minimum inhibition concentration (MIC) values of 6.58×10^{-2} mg/ml and 4.11×10^{-3} mg/ml, respectively. The Tg-HbIIB protein had antibacterial activity toward *V. harveyi*, *P. putida* and *Acinetobacter baumannii*, with MIC values of 1.58×10^{-1} mg/ml, 3.95×10^{-2} mg/ml and 7.90×10^{-2} mg/ml, respectively. They had no antibacterial activity against *Staphylococcus aureus*, *E. coli*, *Bacillus firmus*, *B. subtilis*, *S. epidermidis* or *V. parahaemolyticus*. This study provides a basis for further research on the antibacterial function and mechanism of hemoglobin.

Biography

Yongbo Bao has expertise in three field of his research: (1) Immune mechanism of molluscs: Molluscan immune and disease-resistant gene function, immune mechanism, antibacterial peptides and antibacterial mechanism etc. (2) Molluscan genetics and molecular assistant breeding: Population genetic structure, genetic linkage map, SNP and GWAS and phenotype association analysis. (3) Gene and molecular phylogeny and evolution: Immunity and development related gene function study and molecular evolution analysis.

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