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Expression of *Macrobrachium rosenbergii* lipopolysaccharide- and β -1,3-glucan-binding protein (LGBP) in *Saccharomyces cerevisiae* and evaluation of its immune function

Jie Du, Huanxi Zhu, Chunlei Cao, Yan Ma

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2 **β -1,3-glucan-binding protein (LGBP) in *Saccharomyces cerevisiae***
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5 Jie Du^{a,b}, Huanxi Zhu^c, Chunlei Cao^d, Yan Ma^{a,b,*}

6 ^aInstitute of Agricultural Resources and Environment, Jiangsu Academy of Agricultural Sciences,
7 Nanjing, China

8 ^bKey Laboratory of Agro-Environment in Downstream of Yangtze Plain, Ministry of Agriculture,
9 Nanjing, China

10 ^cInstitute of Animal Sciences, Jiangsu Academy of Agricultural Sciences, Nanjing 210014, China

11 ^dThe National Engineering Laboratory for Cereal Fermentation Technology, Jiangnan University,
12 Wuxi 214122, China

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15 **ABSTRACT**

16 Pattern recognition proteins (PRPs) activate the innate immune system in invertebrates, and
17 lipopolysaccharide- and β -1,3-glucan-binding protein (LGBP) is an important PRP with various
18 biological functions. Here, the open reading frame (ORF) of *Macrobrachium rosenbergii* LGBP
19 (MrLGBP) was cloned into plasmid vector pHAC181, then integrated into downstream of the
20 GAL1 promoter of *Saccharomyces cerevisiae* strain GAL1-ScRCH1 via homologous
21 recombination, followed by its expression in the yeast eukaryotic system. The resulting
22 recombinant LGBP contained a 3 \times HA-tag at its C terminus and had a molecular weight of about
23 45 kDa, as evaluated by western blot analysis. Minimum inhibitory concentration (MIC) and
24 minimum bactericidal concentration (MBC) were ranged from 0.340 to 0.802 and 1.189 to 1.810
25 μ M, respectively. The recombinant MrLGBP protein agglutinated almost all tested bacteria except
26 *Bacillus thuringiensis* and *Staphylococcus aureus*. These results revealed that this recombinant
27 protein exhibited antimicrobial activity against some Gram-positive and Gram-negative bacteria.
28 *M. rosenbergii* prawns were fed with the recombinant yeast strain MrLGBP for 1 month and

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