

## ABSTRAK

### EFEK PEMBERIAN HEMOLYMPH KEPITING BAKAU (*Scylla serrata*) PADA INFEKSI *METHICILLIN RESISTANT Staphylococcus aureus* SECARA *IN VITRO* DAN *IN VIVO*

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Kasus infeksi *Methicillin Resistant Staphylococcus aureus* (MRSA) yang telah resisten terhadap sebagian besar antibiotika beta-lactame menyebabkan *sepsis* dan *toxic shock syndrome* yang fatal. *Scylla serrata* atau kepiting bakau dikenal mampu hidup dalam lingkungan air tercemar penuh dengan mikroorganisme patogen, karena memiliki imunitas non spesifik berupa *Antimicrobial Peptides* (AMPs) dalam sirkulasi *hemolymph*/darah. Penelitian bertujuan mengevaluasi aktivitas antibakteri *hemolymph* kepiting bakau terhadap infeksi sistemik MRSA secara *in vitro* dan *in vivo*. Uji *in vitro*, pemberian *hemolymph* konsentrasi bertingkat 1%-50% dengan *doxycycline* sebagai kontrol pada *paper disc*, didapatkan konsentrasi terendah *hemolymph* dengan aktivitas antibakteri optimal adalah 10% berukuran DDH sebesar  $12 \pm 0,62$  mm. Konsentrasi *hemolymph* optimal (10%) dipilih untuk dibuat sediaan basis *dextrosa*. Uji *in vivo* dilakukan dengan menggunakan 15 ekor mencit yang diinfeksi dengan MRSA  $800 \mu\text{l } 10^8$  CFU secara intraperitoneal dan 3 hari kemudian dilanjutkan dengan  $40 \mu\text{l } 10^8$  CFU MRSA intravena. Mencit dibagi dalam 3 kelompok, kelompok I (kontrol *placebo*), kelompok II (*doxycycline*), dan kelompok III (perlakuan *hemolymph*) diberi setiap hari selama 15 hari. Pemberian sediaan *hemolymph* 10% selama 15 hari mampu meredakan gejala infeksi sistemik MRSA yang didukung dari hasil histopatologi organ. Sediaan *Hemolymph* 10% memiliki aktivitas antibakteri terhadap infeksi sistemik MRSA secara *in vitro* dan *in vivo*.

**Kata kunci:** *Hemolymph*, *Scylla serrata*, infeksi MRSA, resistensi.

**ABSTRACT**

**THE EFFECT OF ADMINISTRATION MUD CRAB (*Scylla serrata*)  
HEMOLYMPH ON INFECTION CAUSED BY METHICILLIN  
RESISTANT *Staphylococcus aureus***

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The case of systemic infection of *Methicillin Resistant Staphylococcus aureus* (MRSA) that has been resistant to most beta-lactame antibiotic cause fatal sepsis and toxic syndrome. *Scylla serrata* or mud crabs have complex immune system to survive in a micro-pathogenic tainted water environment, because they have a non-specific immunity of *Antimicrobial Peptides* (AMPs) in the *hemolymph*/blood circulation. The study aims to evaluate the crab blood antibacterial activity against MRSA systemic infections *in vitro* and *in vivo*. *Hemolymph* concentration of 1%-50% were tested *in vitro* with *doxycycline* as controls in paper disc, obtained the lowest *hemolymph* concentrations with optimum antibacterial activity were 10% with  $12 \pm 0.62$  mm on inhibition zone, optimum blood concentration (10%) was chosen for dextrose-base oral drug. *In vivo*, 15 mice were infected with 800  $\mu$ l  $10^8$  CFU MRSA intraperitoneally and after 3 day infected again with 40  $\mu$ l  $10^8$  CFU intravenously. Mice were divided into 3 groups, group I (*placebo* control), group II (*doxycycline*), and group III (*hemolymph* 10%) were given daily for 15 days. Giving of *hemolymph* 10% for 15 days was able to symptoms of systemic MRSA infections supported by histopathology organ results. *Hemolymph* 10% has antibacterial activity against MRSA systemic infection *in vitro* and *in vivo*.

**Keywords:** *Hemolymph*, *Scylla serrata*, MRSA infection, resistant.