

**Putra, 2015, Uji Aktivitas Antibakteri dan *Molecular Docking* Carboxymethyl-Chitosan–Urea-Oksalat (CMChi-UOX) terhadap Protein FhuA pada Bakteri *Escherichia Coli*, skripsi ini dibawah bimbingan Dr. Ir. H. Suyanto, M.Si. dan Drs. Handoko Darmokoesoemo, DEA., Departemen Kimia, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya**

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## ABSTRAK

*Carboxymethyl chitosan (CMChi)* yang *dicross-link* dengan senyawa urea-oksalat (UOX) merupakan senyawa turunan kitosan. Senyawa ini disintesis sebagai antibakteri terhadap protein FhuA pada *Escherichia coli*. Metode Cakram Disc Diffusion digunakan untuk menentukan aktivitas antibakteri pada senyawa uji setelah itu dilakukan pengukuran zona hambat di sekitar kertas cakram. Aktivitas antibakteri pada *CMChi* dan *CMChi-UOX* dibandingkan dengan variasi konsentrasi. Konsentrasi optimum dari *CMChi* adalah 4% sedangkan pada *CMChi-UOX* adalah 1,0%. Untuk mengetahui interaksi yang terjadi antara senyawa *CMChi* dan *CMChi-UOX* dilakukan uji Molekuler Docking pada outer membran *Escherichia coli*. Dari uji Molekuler Docking diperoleh energi binding pada *CMChi* dan *CMChi-UOX* berturut-turut sebesar -2,99 kkal/mol dan -4,85 kkal/mol.

**Kata Kunci:** *CMChi-UOX*, *Escherichia coli*, Metode Cakram Disc Diffusion, Antibakteri Molekuler Docking, Energi Binding, Protein FhuA

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## ABSTRACT

*Carboxymethyl chitosan (CMChi)* crosslinked with urea-oxalate compound (UOX) was a derivatives compound of chitosan. This compound was synthesized as an antibacterial in *Escherichia coli*. Cakram Disc Diffusion method was used to determine the antibacterial activity of the tested compound, after that the measurement of zone of inhibition around the paper disc was done. Antibacterial activity on *CMChi* and *CMChi-UOX* were compared with the variation of concentration. The optimum concentration of *CMChi* was 4% while in *CMChi-UOX* was 1.0%. To determine the interactions that occurred between the compound *CMChi-UOX* and *CMChi*, Molecular Docking test on the outer membrane proteins of *Escherichia coli* was done. The Energy Binding on *CMChi-UOX CMChi* obtained from the Molecular Docking was respectively on the value of -2.99 kcal / mol and -4.85 kcal / mol.

**Keywords:** *CMChi-UOX, Escherichia coli*, Cakram Disc Diffusion Method, Antibacteria, Molecular Docking, Energy Binding, FhuA protein.