

Syamon, B. P., 2015, Uji In vitro dan In silico *Carboxymethyl-chitosan (CMChi)*-Benzaldehid terhadap Bakteri *Escherichia coli*, Skripsi ini di bawah bimbingan Dr. Ir. H. Suyanto, M.Si dan Drs. Handoko Darmokoesoemo, DEA. Departemen Kimia, Fakultas Sains dan Teknologi, Universitas Airlangga

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### ABSTRAK

*Carboxymethyl-chitosan (CMChi)*-Benzaldehid disintesis sebagai agen bakteri terhadap *Escherichia coli*. Aktivitas antibakteri ditentukan dengan metode Cakram Disc Diffusion dan pengukuran zona hambat di sekitar kertas cakram. Aktivitas antibakteri *CMChi* dan *CMChi*-benzaldehyd diuji pada variasi konsentrasi 2%, 4%, 6%, 8%, dan 10%. Konsentrasi optimum *CMChi* dan *CMChi*-benzaldehyd dalam menghambat pertumbuhan *Escherichia coli* sebesar 4% dan 6% secara berturut. Hasil zona hambat (diameter) yang dilakukan secara duplo didapatkan sebesar 3 dan 4mm pada *CMChi* 4% serta 6 dan 9mm pada *CMChi*-benzaldehyd 6%. *Energy binding* yang dihasilkan *CMChi* dan *CMChi*-benzaldehyd berturut-turut didapatkan dengan uji *Molekular Docking* pada protein FhuA membran outer *Escherichia coli* dengan nilai sebesar -2,99 kkal/mol dan -4,71 kkal/mol.

Kata kunci : *CMChi*-benzaldehyd, *Escherichia coli*, Antibakteri, Cakram Disc Diffusion, Molekular Docking, FhuA

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### ABSTRACT

Carboxymethyl-chitosan (CMChi)-benzaldehyde was synthesized as an antibacteria agent against *Escherichia coli*. Antibacteria activity was determined by Cakram Disc Diffusion method and measuring the inhibition zone around cakram disc. The antibacteria activity between CMChi and CMChi-benzaldehyd was compared by varying concentration at 2%, 4%, 6%, 8%, and 10%. Optimum concentration of CMChi and CMChi-benzaldehyd of inhibiting *Escherichia coli* growth was attained at 4% and 6% respectively. The result of inhibition zone from duplo test showed 3 and 4mm for CMChi 4% and 6 and 9mm for CMChi-benzaldehyde 6% as the highest inhibition zone of each compound. The Energy Binding was determined by Molecular Docking of FhuA protein of *Escherichia coli*, results showed at -2,99 kcal/mol for CMChi and -4,71 kcal/mol for CMChi-benzaldehyde.

Keywords : CMChi-Benzaldehyde, *Escherichia coli*, Antibacteria, Cakram Disc Diffusion, Molecular Docking, FhuA