MATERIAL Ag_2O/BENTONIT SEBAGAI ANTIBAKTERI *Escherichia coli*

Ilyas Taufik Abdul Aziz

12/331577/PA/14775

INTISARI

Sintesis, karakterisasi dan uji aktivitas antibakteri material Ag_2O/bentonit terhadap bakteri *Escherichia coli* telah dilakukan. Tujuan penelitian ini adalah dapat membuat material Ag_2O/bentonit yang memiliki sifat antibakteri, dan dapat menentukan konsentrasi Ag_2O/bentonit yang memberikan aksi antibakteri paling efektif terhadap *E. coli.*

Preparasi diawali dengan perlakuan terhadap bentonit yang dihaluskan dan disaring 100 *mesh*, kemudian diaktivasi dengan H_2SO_4 1 M untuk menghasilkan H/bentonit. Sintesis Ag_2O/bentonit dilakukan dengan cara impregnasi basah. Produk dikarakterisasi dengan FTIR, XRD dan SEM-EDS. Aktivitas antibakteri produk diuji dengan metode *Agar Diffusion Test* dengan variasi konsentrasi 5, 10, 15 dan 20 mg/L.

Hasil penelitian menunjukkan jika Ag_2O/bentonit telah berhasil terbentuk yang dikonfirmasi oleh difraktogram XRD dengan keberadaan puncak pada 2θ = 33,92 dan 37,67^o. Tampilan SEM menunjukkan jika modifikasi bentonit menjadi Ag_2O/bentonit menyebabkan perubahan pada permukaan bentonit. Data EDS menunjukkan kandungan Ag di dalam bentonit meningkat 20,32% (b/b) setelah dimodifikasi menjadi Ag_2O/bentonit. Hasil uji antibakteri menunjukkan bahwa ketiga produk memiliki aktivitas antibakteri. Ag_2O/bentonit dengan konsentrasi 20 mg/L menunjukkan aktivitas antibakteri paling efektif .

Kata kunci: Ag_2O/bentonit, antibakteri, bentonit, *Escherichia coli*

MATERIAL OF Ag_2O/BENTONITE AS AN ANTIBACTERIAL OF *Escherichia coli*

Ilyas Taufik Abdul Aziz

12/331577/PA/14775

ABSTRACT

Synthesis, characterization and antibacterial activity test of Ag_2O/bentonite against *Escherichia coli* bacteria had been done. The aim of this experiment were to make Ag_2O/bentonite material that has antibacterial properties, and determine the concentration of Ag_2O/bentonite which provided the most effective antibacterial action against *E. coli*.

Preparation initiated with the treatment of bentonite that was crushed and sieved to 100 mesh, then it was activated with H_2SO_4 1 M to produce H/bentonite. Synthesis of Ag_2O/bentonite was done by wet impregnation. Products were characterized by FTIR, XRD and SEM-EDS. Antibacterial activity of the products were tested with Agar Diffusion Test method with concentrations variation of 5, 10, 15 and 20 mg/L.

The results of experiment showed that Ag_2O/bentonite had been formed. The formation of Ag_2O/bentonite was confirmed by XRD difractogram with appearance of peaks at 2θ = 33.92 and 37.67º. SEM image showed that bentonite modification to Ag_2O/bentonite changed surface of bentonite. EDS data showed Ag wt % in the bentonite increased 20.32 wt % after modified to Ag_2O/bentonite. The result of antibacterial test showed that all three products had antibacterial activity. The Ag_2O/bentonite with concentration 20 mg/L showed the most effective antibacterial activity.

Keyword: Ag_2O/bentonite, antibacteria, bentonite, *Eschericia coli*