

## BAB V

### KESIMPULAN DAN SARAN

#### V.1. Kesimpulan

1. Sintesa alginat-mesopori silika-antibakteri dilakukan dengan cara mensintesa antibakteri metal oksida yang berukuran nano kedalam mesopori silika MCM-41 kemudian dicampur dalam natrium alginat yang telah ditambah dengan gliserol dan dilakukan *cross link* dengan larutan kalsium alginat. Waktu perendaman berpengaruh terhadap sifat fisik dari bioplastik.
2. Hasil analisa FTIR(ATR) menunjukkan adanya ikatan OH *stretching vibration*, *asymmetric COO<sup>-</sup> stretching*, *symetric COO<sup>-</sup> stretching*, dan *CO<sub>2</sub> bounding* sebagai gugus fungsi penyusun alginat. Gugus fungsi Si-O-Si sebagai gugus fungsi mesopori silika (MCM-41). Gugus fungsi Zn-O maupun Ag-O sebagai metal oksida yang berperan penting dalam antibakteri.
3. Uji antibakteri dilakukan pada bioplastik dengan penambahan mesopori silika yang termodifikasi untuk mengetahui rasio optimum dari antibakteri yang terkandung didalamnya. Pada bakteri gram negatif rasio modifikasi MS-ZnO yang memiliki zona hambat terbesar adalah 2%, sedangkan rasio MS-AgO adalah 3%. Pada bakteri gram positif rasio MS-ZnO dan MS-AgO yang memiliki zona hambat terbesar adalah 3%.
4. Uji degradasi nano komposit alginat selama 2 minggu pada rasio 2% dan 3% MS-AgO dan MS-ZnO diperoleh MS-ZnO 2% terdegradasi lebih cepat dibandingkan MS-ZnO 3% maupun MS-AgO 2% dan MS-AgO 3%

**V.2. Saran**

1. Dalam pembuatan nano komposit alginat termodifikasi dengan metal oksida perlu dilakukan analisa XRD (*X-ray diffraction*) untuk mengetahui ada tidaknya gugus metal oksida yang ada secara jelas.

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