BAB V

KESIMPULAN DAN SARAN

Kompleks senyawa metal Cu(II) dengan ekstrak biomassa lerak berhasil disintesa pada pH 3, 5, 7, 9 dan 11, dengan *yield* yang paling tinggi didapatkan pada BioMOF-11. Hasil SEM menunjukkan bahwa BioMOF-3 dan 5 memiliki bentuk rhombohedral, sedangkan BioMOF-7, 9 dan 11 memiliki bentuk rhombic dodecahedral. Karakterisasi FTIR menunjukkan bahwa ada keberadaan gugus OH dan CH pada setiap BioMOF yang tersintesa. Karakterisasi XRD menunjukan terbentuknya kristal paratacamite ($ClCu_2H_3O_3$) pada BioMOF-3 dan kristal Cu_2O pada BioMOF-5, 7, 9, dan 11 dengan ukuran kristal sebesar 14,22, 18,21, 9,89, 8,82, 8,59 nm. Hasil uji antioksidan DPPH menunjukan ekstrak lerak merupakan antioksidan terkuat dengan nilai IC_{50} sebesar 119,07 ppm dan BioMOF-3 merupakan antioksidan terlemah dengan nilai IC_{50} sebesar 785,79 ppm. Hasil uji antioksidan *hydroxil radical* menunjukan ekstrak lerak merupakan antioksidan terkuat dengan nilai IC_{10} sebesar 9,69 ppm dan BioMOF-3 memiliki sifat antioksidan paling rendah dengan nilai IC_{10} sebesar 88,04 ppm. Hasil antibakteri didapatkan bahwa antibakteri terkuat adalah BioMOF-7, dimana (500 ppm) dan antibakteri terlemah adalah ektrak lerak (800 ppm). Hasil adosrpsi % *removal* BioMOF terhadap pewarna *Methylene Blue, Malachite Green, Methyl Orange*, metal Pb dan Hg didapatkan BioMOF-7 merupakan adsorbat yang memiliki efisiensi tertinggi, pada pewarna Methylene Blue (72,23%), Malachite Green (51,93%), Methyl Orange (76,75%), metal Pb (93,17%), dan Hg (48,49%). Ditemukan pada uji kinetik adsorpsi terhadap *Methylene Blue* memiliki model yang paling cocok ialah *linear pseudo second order*.

Penulis memberi saran untuk melakukan uji adsorpsi kinetik untuk metal sekaligus uji adsorpsi isoterm dan pH optimal untuk metal dan pewarna. Selain itu, penulis juga menyarankan untuk melakukan uji antibakteri ke jenis bakteri lain yakni *S. aureus*, yang merupakan bakteri gram-positif.

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