BAB V
KESIMPULAN DAN SARAN

V.1 Kesimpulan

Pada penelitian ini telah dilakukan sintesis CQDs dengan menggunakan sumber karbon yang ramah lingkungan berupa tanaman anting-anting (*A. indica*) dengan metode hidrotermal. Dalam penelitian ini menunjukkan seiring kenaikan suhu sintesis CQDs, memberikan pengaruh terhadap sifat optik yang tampak pada meningkatnya intensitas absorbansi serta fenomena *blueshift* pada spektrum absorbansi UV-Vis. CQDs juga menunjukkan adanya gugus fungsi seperti hidroksil dan karboksil pada permukaannya. Di samping itu, CQDs dari *A. indica* dapat digunakan sebagai agen antioksidan dan antibakteri, bahkan bekerja lebih baik dibandingkan dengan ekstraknya. CQDs yang disintesa pada suhu 140°C memberikan sifat biologis yang lebih baik dibandingkan CQDs yang disintesa pada suhu lain. Hasil aktivitas antioksidan CQDs mampu menangkal radikal dari DPPH dan anion superoksida masing-masing sebesar 85% dan 47,2%. Sedangkan, ekstrak tanpa modifikasi lebih lemah menangkal radikal yang ditunjukkan dengan aktivitas antioksidan lebih rendah, masing-masing sebesar 78% (DPPH) dan 43,1% (anion superoksida). Selain itu, hasil aktivitas antibakteri dengan metode difusi cakram menunjukkan bahwa CQDs tidak efektif terhadap *E. coli*; namun, efektif terhadap *S. aureus* dengan zona hambat sebesar 7 mm, sedangkan ekstraknya hanya 5 mm. Dengan metode kuantitatif yaitu *plate count*, diketahui bahwa CQDs mampu menghambat bakteri *E. coli* dan *S. aureus* masing-masing sebesar 61,11% dan 97,2%.

V.2 Saran

Dapat dilakukan analisa karakterisasi pada CQDs dengan PL (*photoluminescence*) untuk mengetahui perbedaan intensitas fluoresens secara tepat dan TEM untuk mengetahui ukuran partikel hasil sintesis secara tepat. Selain itu, dapat dilakukan penambahan agen pasivasi atau doping selama proses sintesis CQDs untuk meningkatkan aktivitas biologisnya.

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