

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

Chitosan-magnetite nanoparticles were successfully synthesized via Cu(I)-free “click” chemistry in mild condition to obtain triazole linkage. The chitosan-magnetite nanoparticles showed a content of chitosan about 13 percent with superparamagnetic about 63 emu/g and coercivity about 24 G. As observed by dynamic light scattering and transmission electron microscope, the particles performed good dispersion and high stability in PBS buffer solution at pH 4-10 with hydrodynamic radius approximately 200 nm. and the solvents polarity, played an important role in controlling hydrodynamic radius and individual size of the particles. The preliminary study of *E. coli* separation showed a potential application in using chitosan-magnetite nanoparticles media for DNA separation.

The future work is related to an improvement of DNA separation efficiency and selectivity by incorporating nucleic acid analogs to chitosan. Another point to be considered is cytotoxicity (Appendix B) of the product particles for the use in biocells because the nanoparticles obtained showed high toxicity during 24 h. However, the nanoparticles obtained showed high percent of cell viability in 1-4 h, which suggested a potential application.