

CHAPTER V

CONCLUSIONS

Hexanoylated chitosans were synthesized from two different methods through chemical modification of chitosan. H-1, H-2 and H-3 chitosan [Degrees of hexanoylation of 2.76, 3.77 and 3.85, respectively] were obtained by hexanoylation on both amino and hydroxyl groups on chitosan units while H-P chitosan (Degree of hexanoylation of 2.65) obtained from protection method still contained high content of free amino groups. With increasing degree of substitution, solubility increased and metal adsorption ability decreased. H-2 and H-3 chitosan displayed excellent solubility in common organic solvents with low metal adsorption ability. H-P chitosan displayed solubility in organic solvents while metal adsorption ability still was retained. Although H-P chitosan showed less metal adsorption than H-1 chitosan because of remaining protective group, it dissolved easily in DMSO while H-1 chitosan did not dissolve in any organic solvents. The thermal stability and crystallinity of these hexanoyl chitosans were lower than those of chitosan due to the loss of intra- and inter-molecular hydrogen bonds and large substituent group resulting in poor packing of hexanoyl chitosan main chains.