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APPENDICES

Appendix A Calculation of degree of deacetylation of chitosan (DD)

^{1}H NMR spectroscopy

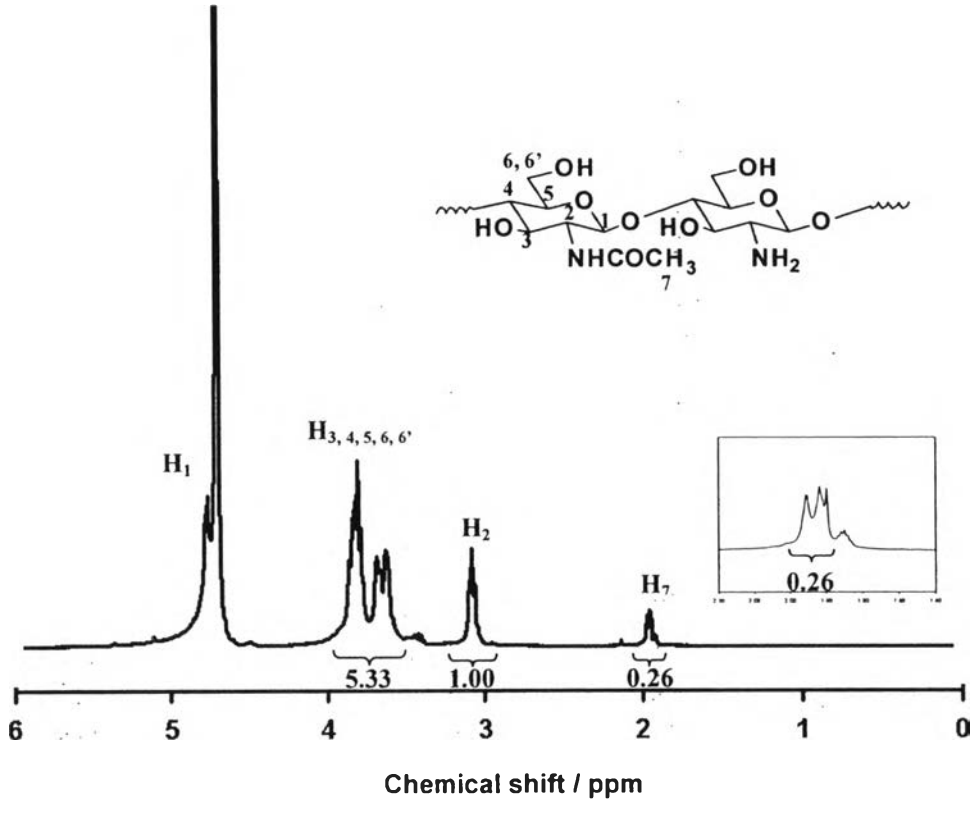

Figure A ^{1}H NMR spectrum of low molecular weight chitosan (LCS) in 2% CD_3COOD/D_2O.

From Figure A; $DD = 1-\left\{ \left[\frac{1}{3} I_{H7} \Big/ \frac{1}{6} I_{H2\text{-}H6} \right] \right\} \times 100$

$= (1-(0.26/3)/((5.33+1.00)/6)) \times 100$

$= 91$

FTIR spectroscopy

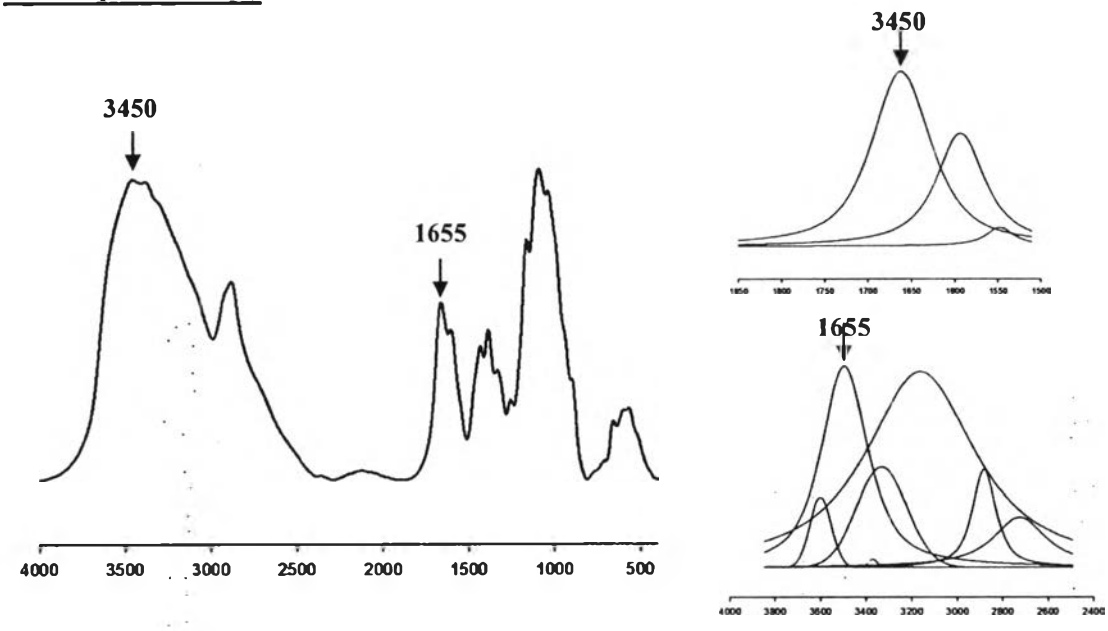

Figure B FTIR spectrum of low molecular weight chitosan (LCS).

From Figure B; DD = 100 - $[(A_{1655} / A_{3450}) \times 100 / 1.33]$

= 100-[(56.12391/211.1925) × 100 / 1.33]

= 80

Appendix B Zeta potential of materials

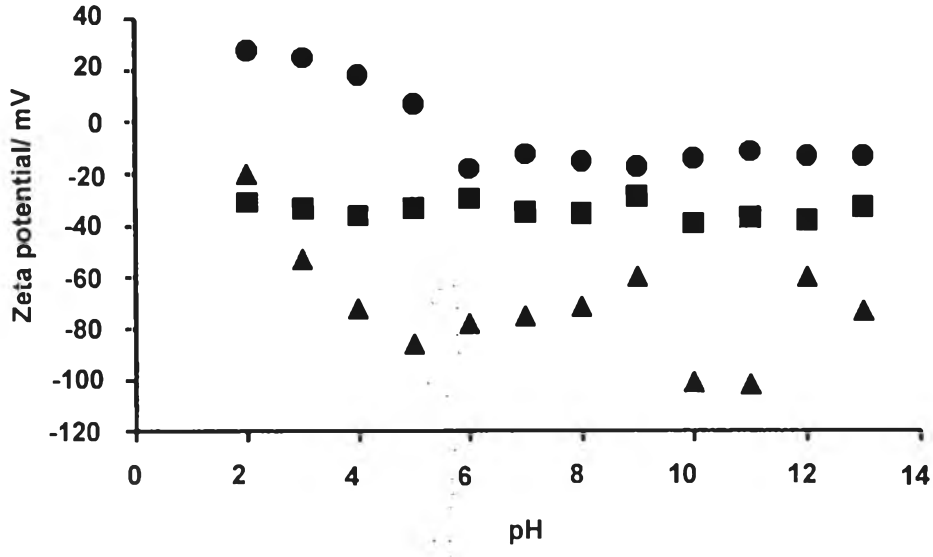

Figure C Zeta potential of chitosan-magnetite nanoparticles via direct conjugation (•), Dynabeads (■), and chitosan-magnetite via 'click' chemistry (▲) in various pH of PBS buffer solution.

Appendix C Cytotoxicity by MTT assay

Cells: Mouse fibroblast L929 passage 21, 10000 cells in 96 well plates

Exposed time: 24 hours

	% Viability				
Concentration (µg/ml)	16	8	4	2	1
Cell control	100	100	100	100	100
Uncoated-magnetite particles	2.67	2.83	60.79	91.35	89.94
LCS	3.12	5.4	42.35	54.12	70.14
Azide-magnetite	3.25	3.02	36.87	84.95	85.84
Alkyne-phthaloyl-chitosan	2.89	5.09	37.84	58.63	73.82
Phthaloylchitosan-magnetite particles	2.97	4.6	41.53	49.75	67
Chitosan-magnetite particles	2.84	4.5	36.4	42.57	50.18

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Proceedings:

1. Phuangsawai, O., and Chirachanchai, S. (2011) Synthesis and characterization of chitosan-magnetite nanoparticles via "click" chemistry. Proceedings of The 2nd National Research Symposium on Petroleum, Petrochemicals, and Advanced Materials and The 17th PPC Symposium on Petroleum, Petrochemicals, and Polymers, Bangkok, Thailand.

Presentations:

1. Phuangsawai, O., and Rukachaisirikul, V. Chemical constituents form the leaves of *Tithonia Diversiferlia*. (2009, March20-21). Poster and oral presentations at the 4th Conference on Science and Technology for youths, Bangkok International trade and Exhibition center (BITEC), Bangkok, Thailand.

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