

CHAPTER IV

CONCLUSION

In this work, chitosan derivatives with UV absorption property were successfully prepared. Phthaloylchitosan was first prepared by phthaloylation of chitosan to improve solubility property of the polymer. Grafting of 4-methoxycinnamic acid and/or 2,4,5-trimethoxycinnamic acid onto phthaloylchitosan was done by using 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride (EDCI) coupling agent and (HOBt). Grafting of 4-methoxycinnamic acid on chitosan gave 4-methoxycinnamoyl phthaloylchitosan with degree of substitution of 0.52 (Figure 4.1A), grafting of 2,4,5-trimethoxycinnamic acid on chitosan gave 2,4,5-trimethoxycinnamoyl phthaloylchitosan with degree of substitution of 0.63 (Figure 4.1B) and grafting of 2,4,5-trimethoxycinnamic acid and 4-methoxycinnamic acid onto phthaloylchitosan gave 2,4,5-trimethoxycinnamoyl-4-methoxycinnamoyl phthaloylchitosan with degree of substitution of 0.29 (Figure 4.1C). Similar grafting was also done on irradiated chitosan (M.W. 8,000-14,000) using similar procedure as described previously for non irradiated chitosan. Photostability test revealed that the double grafted high M.W. chitosan were more photostable than free OMC. Moreover, skin absorption tests of all products suggested that skin penetration of the chromophores grafting on chitosan and irradiated chitosan were significantly lower than OMC.

A



