CHAPTER V
CONCLUSIONS

In the present contribution, microwave technique was successfully used to crosslink CM-chitin and CM-chitosan films for possible use in wound care applications. Fourier-transformed infrared spectroscopy indicated that crosslinking of the microwave-treated CM-chitin films involved mainly the carboxylate and the secondary alcohol groups, while crosslinking of microwave-treated CM-chitosan films involved the carboxylate and the amino groups. Neat CM-chitin films appeared to be semicrystalline, while neat CM-chitosan films appeared to be amorphous. Increasing microwave treatment time (when the treatment time interval was longer than 30 min) resulted in the observed increase in the crystallinity of the treated CM-chitin films, whereas all of the microwave-treated CM-chitosan were still amorphous. At a similar percentage of weight loss, the crosslinking of either CM-chitin or CM-chitosan films by microwave treatment required much less stringent condition when compared with the crosslinking by autoclave treatment. Based on both direct and indirect cytotoxicity assays, microwave-treated CM-chitin films were cytocompatible, while microwave-treated CM-chitosan films were not. Despite their observed cytotoxicity, biological response of human fibroblast cells on microwave-treated CM-chitosan films appeared to be normal, as evidenced from the amount of protein systhesis. Lastly, it was observed that human fibroblast cells adhered on the surface of microwave-treated CM-chitosan films much better than on the surface of microwave-treated CM-chitin films.