

CHAPTER V

CONCLUSIONS

A chitosan-conjugated agricultural polymer drug was achieved. Chitosan conjugated carbaryl insecticide was obtained by two different approaches. Carbaryl was directly couples onto chitosan at the C-6 position to give chitosan-carbaryl (Type 1) as confirmed by FT-IR and solid state NMR via iodochitosan precursor. This Type 1 compound stabilizes carbaryl even in basic conditions for carbaryl degradation because the chitosan acts as a protecting chain.

N,N'-Carbonyldiimidazole was used as a conjugated spacer to achieve the polymer drug chitosan-CDI-carbaryl (Type 2) which was characterized by FT-IR, and solid state NMR. The release study under basic conditions proved that the ester of the spacer group is the key factor for the controlled release of carbaryl.