CHAPTER V
CONCLUSIONS

Chitin and rice starch were used as biopolymer fillers for HDPE blends. Chitin is a flaky material while rice starch is in the form of finer granules which forms agglomerates. In this study, the filler content plays an important role in determining the mechanical properties of the blends. With increasing filler content, the tensile yield strength, strain at yield, flexural yield strength, and impact resistance decrease, whereas tensile and flexural moduli increase. The decrease in mechanical properties may have occurred because the polymer matrix and both fillers are immiscible. Little or no adhesion between the filler particles and the HDPE matrix is observed by scanning electron micrographs. Furthermore, the size of the starch agglomerates becomes bigger as the rice starch content in the blends increases. The rice starch-filled HDPE blends give lower values of most of mechanical properties than those of chitin-filled HDPE blends perhaps due to the agglomeration of the rice starch particles. The water absorption studies show that both blends absorb more amount of water when the amount of fillers and immersion time increase. At higher filler contents, the water absorption of rice starch-filled HDPE blends are higher than that of chitin-filled HDPE blends.