CHAPTER IV
CONCLUSION

The goal of this research is to find out the optimum conditions for acid chloride preparation, which carried out under mild reaction. From this research, acid chloride was prepared by treating carboxylic acid with chlorinated reagent and PPh_3, after that it was transformed to amide by trapping with amine for characterization. The optimum conditions were disclosed to be carboxylic acid 1 eq. as substrate, Cl_3CCN 1 eq. and PPh_3 2 eq. as reagents, $CHCl_3$ 6 mL as solvent and the reaction should be carried out under 0-5 °C for two hours. Some electron-withdrawing reagents such as Cl_3CCONH_2 and $Cl_3CCOOEt$ can be used in lieu of Cl_3CCN and some solvents such as THF-$CHCl_3$, ether-$CHCl_3$, acetone-$CHCl_3$, CH_2Cl_2 and acetonitrile can be used instead of $CHCl_3$.

Various carboxylic acids and amines were examined to verify this developed procedure. The outcome of the carboxylic acid variation demonstrated that this method was suitable with aromatic carboxylic acid than aliphatic acid and appropriate with acid with electron-donating group than acid with electron-withdrawing group. From the variation of amine, it was concluded that the yields of amides were depending on the reactivity of amine.

The application of this developed acid chloride formation for the synthesis of the biological active amides was also achieved. Eleven biological active amides in benzamide and cinnamamide groups were synthesized by used this manner.

The advantages of this developed procedure over the classical procedure ($SOCl_2$) are using less time and operating under mild conditions. In addition, it does not produce extremely corrosive by-product. Finally, because this method is carried out under acid free condition, therefore it can produce acid chloride from an acid starting material containing acid sensitive functional groups.

Proposed for the Future Work

There are many absorbing points that could be further carried out based upon the outcome originated from this research. For instance, it was found that the reagents with electron-withdrawing group provided acid chloride in high yield. Therefore,

other electron-withdrawing reagents such as O_2NCCl_3 should be meditated. Besides, the substituted group on carboxylic acid also has influence to the yield of acid chloride. So, both kind and position of the substituted group of carboxylic acid must also be realized. In addition, the chemoselectivity of this system is crucially need to be evaluated.