CHAPTER 4
CONCLUSIONS

The determination of diphenhydramine hydrochloride by spectrophotometric flow injection analysis has been developed from a batch procedure. It is based on the ion pair formation of diphenhydramine hydrochloride and bromocresol green in acid phthalate buffer pH 3, which the ion pair formed was extracted into chloroform layer. At the pH of 3, the ion pair formation and the extraction was quantitative. In order to perform the simple and economic fi system, the excess bromocresol green in aqueous layer was then injected into the 0.01M sodium tetraborate stream that gave the blue color and monitored at 610nm. The optimum conditions of fi system were shown in Table 3.8. According to the ratio of diphenhydramine hydrochloride to bromocresol green was 1:1 [19], the bromocresol green concentration used was the limiting factor of the dynamic range. The standard series ranging in concentration from 5.2-187.8ppm of diphenhydramine hydrochloride were investigated. The optimum concentration range for the measurements, conforming to Beer'law are 5-21ppm and 75-185ppm of diphenhydramine hydrochloride using 1.05×10^{-4}M and 5.42×10^{-4}M of bromocresol green with the detection limit of 1 ppm and 15 ppm, respectively. The precision and efficiency of extraction has been carried out with 106.7ppm of diphenhydramine hydrochloride. The relative standard deviation (RSD) of fia system and procedure are 1.6% (n=11,106.7ppm) and 1.5% (n=7,106.7ppm), respectively. The percent extraction is 92.6% (n=7,106.7ppm).

The method has been applied to the determination of diphenhydramine hydrochloride in pharmaceutical preparations. The results obtained are no significant differrence from those obtained by HPLC [35] and batch procedure [19] at the 95% confidence level. The tolerance of the method to foreign compounds commonly present in pharmaceutical preparations were investigated. It was found that those compounds presented with diphenhydramine hydrochloride in pharmaceutical preparations containing single tertiary alkylamine drugs do not interfere the determination. However, the efficiency of extraction is decreased, due to the

effecting of the pH of solution present. Therefore, the solution should be adjusted by the acid phthalate buffer pH 3 before extraction.

The developed spectrophotometric flow injection system provides a precise, fast with sample throughputs of 100 injections per hour and is easily applied in routine work. Automated in-line extraction method should be further studied.