CHAPTER IV

SUMMARY AND CONCLUSION

2,4-Dinitrophenylhydrazine reacted with mebendazole at carbonyl carbon of ketone group with ratio of one to one to form an orange precipitate of 2,4-dinitrophenylhydrazone derivative which was identified by thin layer chromatography, UV-V spectrometry, infrared spectrometry, H^1-nuclear magnetic resonance spectrometry and mass spectrometry. This derivative showed maximum absorbance at 393 ± 2 nm in chloroform-methanol (2:1) mixture.

The various conditions affecting the reaction such as, temperature, time, acidity, ratio of mebendazole to 2,4-DNPH were studied. The optimum conditions for reaction were at 70°C, for 1 hour, with ratio of mebendazole solution (1 mg/ml) to 2,4-DNPH solution (3.35 mg/ml) was 1 ml to 5 ml, standing at room temperature to complete reaction for 1 hour. The orange 2,4-dinitrophenyl-hydrazone derivative obtained was dissolved in chloroform-methanol (2:1) mixture and the absorbance was measured at 393 ± 2 nm against the solvent. This derivative solution was very stable at room temperature which was very good for quantitative determination. The linear absorbance-concentration was in the concentration range of 1-7 mcg/ml of mebendazole.

The 2,4-DNPH method was applied to determine mebendazole in tablets of five manufacturers. The results obtained were comparable

to those obtained from USP XXI method with high accuracy and good reproducibility. It was found that the excipients did not interfere in 2,4-DNPH method. This method was cheaper, simpler and analyst could perform many samples simultaneously on a routine basis by setting suitable time intervals, but USP XXI method each sample was assayed by using fixed time. Furthermore, USP XXI method has disadvantage due to pungent odour of formic acid.

The 2,4-DNPH method can be applied to assay any drug which contains ketone or aldehyde group or the drug which can be oxidized to ketone eg. secondary alcohol.