CHAPTER VI

CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The combination method, the combustion technique and a substoichiometric isotope dilution technique, has been developed for the quantitative determination of traces of mercury in biological samples. The combustion step was performed in the oxygen flask and the combustion product was absorbed in solution containing 0.1 M. hydrochloric acid and radiomercury. The substoichiometric isotope dilution step was utilized to determine the amount of mercury in sample by extraction the combustion product with zinc dithizonate at pH 3.5. Four millilitre of 20 % hydroxylamine hydrochloride as reducing agent and ten millilitre of EDTA as masking agent were also added. The extract organic phase was counted for gamma activity of mercury-203 tracer and calculated by the given equation.

The optimum conditions for the substoichiometric extraction was previously investigated using mercury-203 as the tracer.

The quantitative recovery of mercury through the proposed separation procedure was primarily checked with mercury-203. The chemical yield for combustion was found to be 96 % with a relative standard deviation of $\pm$ 1.55 %. The

results of six investigations for the recovery of mercury was 1.070±0.030 microgram compared with added mercury 1.007 microgram.

The analysis of two of Standard Reference Materials and Bowen's kale sample gave the result of 0.0141±0.002, 0.1545±0.024 and 0.1695±0.003 ppm. respectively, which were in good agreement with the certified value of 0.016±0.002, 0.155±0.015 and 0.1667±0.023 ppm. respectively.

The scheme developed was fast, inexpensive, simple and applicable for various types of sample matrices.

6.2. Recommendation.

Since the substoichiometric isotope dilution technique is simple, fast, inexpensive and applicable for any common chemistry laboratories, it is advisable to encourage the study of this method for the investigation of other traces of toxic elements, such as antimony, arsenic, cadmium, lead etc. and utilize the developed procedure for the analyses of environmental samples.