PREFACE

In the face of the growing population and expanding industrialisation with its accompanying hazards to human health, is responsible for an increasing and complex range of health problems in developed and developing countries. In the present day world, people are exposed to a great variety of natural and man-made substances. Under certain conditions such exposures cause adverse health effects, ranging from subtle biologic changes to even death.

An escalation in the concentration of toxic pollutants in the biosphere and their ultimate entry into the biological system will pose serious problems on human and natural resources and also on the ecological balance. Indiscriminate use of metals in various industrial and agricultural processes also leads to various health hazards in the environment.

Aluminium is one of the most abundant metals in the earth's crust and it is present in air, water and soil. It does not occur naturally in the metallic elemental state but is widely distributed in the earth’s crust in combination with oxygen, fluorine, silicon, etc.

Aluminium is nutritionally non-essential but a health hazard metal if it is used in higher concentrations. Higher concentrations of aluminium could cause serious effects on several body functions including central nervous system, energy metabolism, haematological system and could even be
Aluminium could also be involved in the etiology of Alzheimer's disease (A.D.), Parkinson dementia and Down's syndrome.

The present study was an attempt to evaluate: The effects of aluminium on the structure and functions of male reproductive organs, viz., testis, cauda epididymis, vas deferens, and some other tissues like muscle, liver, kidney, blood and serum. The possible therapeutic effects of the Vitamins C, D, E and calcium for mitigation of aluminium toxicity was also carried out during the tenure of the study.

The investigations carried out revealed that aluminium affects the histology, ultrastructure and functions of reproductive organs viz., testis, cauda epididymis and vas deferens. Several metabolic alterations were observed viz., altered protein, oxidative and energy metabolism, carbohydrate metabolism, hampered steroidogenesis and disturbed nucleic acid metabolism. The sperm motility was also significantly reduced. These changes caused reduction in fertility in experimental animals. However, these aluminium induced effects were to a significant extent, recovered to almost normal state in many parameters after withdrawal of treatment and ingestion of antidotes. Thus, it is concluded that aluminium induced effects are transient and reversible. The combined treatment of Vitamins D and E was found to be more effective in mitigation of aluminium induced toxicity.

The thesis consists of Chapter I which gives an Introduction and a
review of literature. Chapter II deals with the various Materials and Methods used. Chapter III presents the Results of the study while in the Chapter IV, the results obtained are discussed in the light of earlier work. Chapter V contains the Summary and Conclusions. At the end, a Bibliography is given in an alphabetical and chronological order.

The work embodied in the thesis is as such a significant contribution in the field of aluminium toxicity.

PAPERS / ABSTRACTS PUBLISHED AND SEMINARS / CONFERENCES ATTENDED


