PREFACE

The success in successful eradication of helminthiasis depends on the proper use of a broad-spectrum anthelmintic drug and strict prophylactic regulations followed by the patients. Both these requirements have been met to a great extent in several advanced countries of the world leading to complete elimination of the several forms of helminthiasis from the population. However such a situation does not prevail in different parts of the third world and even some advanced nations.

The habit and habitat, poor sanitation, low living standards and occupational needs are the main criterions for the profound increase in helminth infestations all over the world which has been partially manifested due to lack of a suitable drug. This has also helped in giving rise to multiple infection which, many a times poses serious clinical complications and is difficult to cure. Recent surveys have indicated the high prevalence of intestinal helminthiasis of which infestations due to hookworms and cestodes are particularly important.

In the agriculture-based countries like India, the hookworm infections have a great bearing with the health, general well-being and socio-economic development of the rural masses because of the blood-sucking nature of
the parasites. Cestodes are equally important intestinal helminths because of the potential danger of producing cysticercosis by them. Thus there is a great deal of concern over evolving an anthelmintic which would not only eliminate the roundworms but also simultaneously remove tapeworms, if present, from the gastrointestinal tract of the man. The present work is mainly directed towards the synthesis of potential anthelmintic agents showing activity against hookworms and cestodes.

The first chapter of the thesis deals with the present status of the disease caused by hookworms and cestodes and the various classes of compounds discovered to treat these infections in man and animals. The second chapter covers the synthesis of various substituted-5(6)-N-heteroarylbenzimidazoles and benzthiazoles. In addition a series of 2,2'-disubstituted-5,5'-dibenzimidazoles and 2,5-disubstituted benzimidazoles have been synthesized as the structural congeners of benzimidazole anthelmintics. A number of 1,2- and 1,3-disubstituted alkanes and 1,4-disubstituted piperazines have also been prepared. A series of thiocarboxamides, carboxamides and thioureas have been synthesized and the mechanism of thiophosgene induced desulphurisation of those compounds is studied.

The compounds, thus synthesized, have been evaluated
for their antihookworm activity against *Nippostrongylus brasiliensis* in rats, *Nematodirostes dubius* in mice and *Ancylostoma ceylanicum* in hamsters, anticestode activity against *Hymenolepis nana* in mice and rats and *in vitro* antimicrobial activity against different strains of bacteria and fungi; all these screening results are reported in the present thesis.