New Perspectives on the Chemotherapy
of Malaria, Filariasis, and Leprosy

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1 Introduction

The great advances made in chemotherapy during this century have enabled some measure of control of the major killing diseases of the tropics. Notwithstanding past progress, man today is confronted by a catalog of challenging problems, and the incentive to develop novel and improved antiinfective agents has not diminished. Adequate drugs are still lacking for the treatment of many chronic and debilitating diseases including leishmaniasis, Chagas' disease, filariasis, schistosomiasis, clonorchiasis, trichuriasis, strongyloidiasis, and leprosy. Moreover, reports of drug resistance have often followed advances in chemotherapy like a 'faithful shadow', and this shadow will no doubt lengthen in the future.

The philosophy of global eradication of communicable diseases [1] and the evolution of techniques for its achievement have added a new dimension to research in parasite chemotherapy, namely the urgent need for drugs with protracted action. While the clinician interested in treating an individual often has a variety of good drugs at his disposal and may feel little need for new agents, the public health worker, whose aim is the ultimate eradication of a disease from an entire community, faces problems of a magnitude and type not encountered by the clinician and is frequently unable to achieve his objective of total coverage with currently available drugs.

Future progress in parasite chemotherapy will depend mainly on an increased awareness of such critical problems and needs and on appropriate recognition of biochemical processes within both parasite and host. Intensive efforts to develop useful agents for the treatment of parasitic diseases of livestock, poultry, and other domestic animals have also yielded a variety of promising new substances, and the benefits derived from interplay between human and veterinary research are already apparent.

Recent developments concerning several classes of antiinfective agents developed in the Research Laboratories of Parke, Davis and Company offer new perspectives relative to the chemotherapy of malaria, filariasis, and leprosy, three infectious diseases that are of national importance to India. The present communication deals specifically with six such selected topics:

(1) The key role that the 4-aminoquinolines may still play in the prevention and treatment of malaria.

(2) The phenomenal antimalarial effects of 2,4-diamino-6-[(aryl)thio, sulfinyl, and sulfonyle]quinazolines and related folate antagonists.

(3) Antimalarial profile of 1-(halophenyl)-3-(4-amino-6-methyl-2-pyrimidinyl)guanidines.

(4) A summary of the antifilarial properties of amodiaquine and its congeners, together with allied 1-(p-chlorophenyl)-3-[4-amino-6-(trifluoromethyl)-2-pyrimidinyl]guanidines.

(5) The antifilarial effects of 2,4-diamino-6-[(3,4-dichlorobenzyl)nitrosamine]quinazoline and related folate antagonists.

(6) A review of the development and usefulness of acedapsone and related repository sulfones in the prophylaxis and treatment of leprosy.