

Preface

The disease burden caused by parasitic protozoa and worms is significant and represents a challenging health problem mainly in tropics. The drugs currently used for the treatment of parasitic infections are mostly effective, however, some of them have limitations, such as toxic side effects and high cost. Moreover, some parasitic organisms developed resistance to many of these drugs. There is a need for discovery of new drugs. For centuries, medicinal plants have been used to combat parasitism, and in many parts of the world are still used for this purpose. Plants are valuable sources for the screening of bioactive secondary metabolites, but also bacteria, fungi, terrestrial and marine invertebrates produce pharmaceutically useful compounds with potential antiparasitic activity. Natural product research shows promise in finding new lead structures besides rational drug design.

The search for bioactive natural molecules begins with the screening of various extracts, isolation of active fractions, and identification of the active components when possible. This search must consider, among other things, target specificity, making better use of the biochemical and biological characteristics of individual parasite species, and cytotoxicity determination. This is a multidisciplinary process, which is initially realized in vitro, however, therapeutic concepts have to be validated and toxicity of selected compounds evaluated in animal studies.

Malaria, trypanosomiasis, and leishmaniasis are among the most important public health problems in developing countries. [Chapter 1](#) reviews the most promising results obtained during the screening of antimalarial, trypanocidal, and leishmanicidal properties of natural products classified according to their chemical structure since the year 2000.

[Chapter 2](#) is devoted to the review of anthelmintic properties of bioactive compounds isolated from the various natural sources. Particular attention is paid to the mode of anthelmintic action of natural alkaloids, essential oils, flavonoids, glycosides, saponins, condensed tannins, endoperoxide sesquiterpene lactones, enzymes, and amides against many species of round and flatworms.

How do the natural compounds exert their anthelmintic effects? To get the answers to this question, many examples are presented from the point of view

of benefits for the host (antioxidant and immunomodulatory effects) and direct anthelmintic action of screened compounds in [Chap. 3](#).

It is our hope that this book will provide the readers with a useful survey of the recent results in the screening of natural compounds with promising antimalarial, trypanocidal, leishmanicidal, but mainly anthelmintic effects and that it may serve as a valuable source of information for scientists, postgraduate and graduate students working in medical and pharmacological research.

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