EDITORIAL

TROPICAL PARASITIC DISEASES

The term "parasitic diseases" is used in a restricted sense to refer to those diseases caused by protozoa (malaria, schistosomiasis, leishmaniasis, trypanosomiasis, amoebiasis, giardiasis) and helminths (hookworm, ascaris, filarial, taenia and flukes). It also refers to diseases caused by ectoparasites (body lice, scabies, jigger). Although parasitic diseases are widespread globally, they tend to be prevalent in the African countries particularly those within or close to the tropical rainy forests. Many tropical parasitic diseases are endemic in countries where the population has low purchasing power. Consequently, multinational companies do not invest significantly in research and development (R&D) of drugs to treat these diseases as the expected financial return in minimal. This has given rise to the phrase, "neglected tropical diseases (NTD)". It is estimated that approximately 1 billion people worldwide suffer from one or more of these NTD. Typical examples include lymphatic filariasis, onchocerciasias, schistosomiasis, trypanosomiasis and leishmaniasis.

Many of the parasites have both primary and secondary hosts. The early developmental stages are in domestic or wild animals, snails and insects while the adult parasites infect humans. Targetting both the adult and early developmental stages of the parasite require multiple approaches. While it is possible to eliminate the secondary host such as snail and mosquito, killing the parasite in human body requires that the drug should be selectively toxic to the parasite while doing minimum damage to the human subject. Often, there is no suitable laboratory model which can be used to develop these drugs. As a consequence at the time the drugs are launched into the market, there is inadequate data regarding their efficacy and chronic toxicity. Much of the research is done in laboratories based in countries outside the disease endemic areas. This then shifts the emphasis to post marketing surveillance. Regrettably, in many African countries, postmarketing surveillance is non-existent. Thus it takes a long time to conclude that a drug is not effective. A lot of drugs initially claimed to be efficacious at the time of launching were later found not to be as claimed. For example in the 1970s, dichlorophen which was claimed to be very effective in the treatment of taeniasis has since been discredited in favour of niclosamide and praziquantel. There is ample evidence to suggest that some claims regarding efficacy of benzimidazoles in treatment of helminth infections is at best exaggerated. It is not un-common to find in literature such ambiguous phrases as, "it may be of value" while referring to these drugs, for example in the treatment of hydatid disease.

The World Health Organisation (WHO) has spearheaded research and development of drugs to treat some of the NTD. For example in 1977, UNDP/WHO/World Bank initiated a special programme for research and training in tropical diseases, focusing on six diseases, of which trypanosomiasis is one. It is estimated that approximately 500,000 people in 36 countries of Sub-Sahara Africa suffer from African trypanosomiasis. About 10,000 new cases each year are reported to WHO and of course many more cases go unreported. Some of the current drugs used in treatment of trypanosomiasis were discovered more than 90 years ago. It took nearly 60 years to develop a new safe, effective drug for treatment of this disease.

In this issue of the journal, Mugoyela *et al*. have described synthesis of chemical compounds with potential trypanocidal activity. It must be acknowledged that the discovery of lead compounds in medicinal chemistry is just the first step in the long and tortuous journey of research and development of drugs. This, however in no way distract from the achievement of these authors.

The phrase,'orphan drugs' refer to some drugs used in treatment of NTD where the affected population is very small. Research and development on orphan drugs is totally uneconomical and require heavy subsidy from international organizations (WHO, UNDP, UNICEF) and foundations such as the Ford, Rockefeller and Bill Gates. A typical example is ivermectin used in treatment of onchocerciasis. Many non-governmental organizations (NGO) are supported by these foundations and have been very effective in highlighting some of the NTD. A good example is jigger (*Tunga penetrans*) elimination campaign in

Kenya. Few people realized the magnitude of this problem, which affects poor people in the rural areas until it was highlighted in the newsmedia.

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