CURRENT PROBLEMS IN THE CHEMOTHERAPY OF PARASITIC DISEASES - THE ROLE OF THE PHARMACEUTICAL INDUSTRY

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Summary: The last decade has seen the progressive withdrawal of industrial Research and Development from the field of tropical parasitic disease. If the downward trend persists at the same rate, the already acute situation of absence of suitable drugs for control programmes in high prevalence diseases such as filariasis, schistosomiasis, malaria and trypanosomiasis could become irreversible. The reason for this withdrawal is essentially one of economics. Industry is concentrating its effort in disease areas offering reasonable chance of return on investment. The problem is how to equate the humanitarian needs of the increasing population of developing countries with the need for profitability adequate to maintain viability in industry. A possible answer lies in current WHO policy for establishing collaboration with industry and the recruitment of external expertise and funding supportive to industrial effort.

The last thirty years has been a period of intense activity in the search for therapeutic and prophylactic agents for a very wide range of diseases of man and animals. This has resulted in considerable advances in many fields, notably in antibacterials and drugs for diseases of the Western World. However, there has been markedly less success in the field of tropical diseases.

Exceptions to this are drugs for the treatment of infection with intestinal nematodes and amoebiasis, among which excellent specifics are now available. Far less well served are the great vector-borne diseases such as filariasis, schistosomiasis, malaria and trypanosomiasis. In filariasis, drug research has been at a very low level and no new drug has been produced since diethylcarbamazine was introduced as a microfilaricide in 1948. In schistosomiasis, the
trivalent antimonials have been largely replaced by niridazole, hycanthone and, latterly, oxamniquine. However, all have their shortcomings and are unlikely to be suitable for mass treatment for all three types of schistosome infection.

In malaria, chloroquine, pyrimethamine, proguanil and primaquine were thought to meet most likely requirements for treatment and prophylaxis but the emergence of drug resistant strains has materially altered the picture. New antimalarials, effective against drug resistant strains are now needed. In African trypanosomiasis, the drugs available are toxic and by no means satisfactory whereas in Chagas disease only one drug, 'Lampit', has emerged and has yet to demonstrate widespread utility.

Future development of better drugs for these four diseases of high and increasing prevalence is now much at risk. A highly disturbing feature has been the progressive pull-out of the pharmaceutical industry from this field over the last 10 years. Major effort in drug research has been based in the Western World and many large firms in Europe and America made considerable investment in tropical medicine during the 15 to 20 post-war years. However, the progressive decline in this endeavour offers a current situation where no major company is now operative in the United States and probably no more than six remain active in Europe. In the present investment climate, European programmes may also be at risk for precisely the same reasons of withdrawal in U.S.A. The significance of this situation is best seen against the background of global population trends. At present, the world population of about 3.8 billion is distributed in the ratio of 30% in the developed world and 70% in the developing countries. By 1990, with world population estimated at 5.5 billion the change in distribution pattern will be 20% and 80%. With the exception of malaria, there is little to indicate that the prevalence rate of these diseases has decreased over the past 30 years or that this situation is likely to change for the better in the foreseeable future.

Thus, it is not difficult to anticipate a situation of increased incidence of diseases of already astronomical prevalence coupled with diminishing prospect of development of the means for treatment or contribution from chemotherapy to control or prophylaxis.

It is of importance to reach an understanding of how this dangerous circumstance has come about. Essentially, it is related to the economics of drug development within the pharmaceutical industry.

Unfortunately, the same economic pressures are operating against investment in research to find better agents for vector control where, for instance, resistance to established insecticides presents an increasing problem. This downward trend of support to