

INFRA-SPECIFIC VARIATION IN SCHISTOSOMA MANSONI

By

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ABSTRACT

In S. mansoni, differences have been recorded between geographical strains in a number of biological characters, such as infectivity, morphology, enzyme profiles and egg laying patterns. This study attempts to establish whether geographical strains of the parasite exist in Kenya.

Isolates of S. mansoni from Rusinga Island, Mwea, Kibwezi, Mitaboni, Mitheo, Kinyui and Kalala were compared. The biological characters compared included infectivity rates, morphology, egg laying patterns and isoenzyme profiles. Albino mice, CBA mice and baboons served as definitive hosts.

Infectivity as measured by recoveries of worms was highest with the Kibwezi and Kalala isolates, and lowest with the Mitheo and Rusinga Island isolates. Significant differences were found between the following isolates: Rusinga Island (12.0%) and Kalala (19.9%) Rusinga Island (12.0%) and Kinyui (19.0%) Rusinga Island (12.0%) and Kibwezi (17.9%), Mwea (15.8%) and Kinyui (19.0%) and Mitheo (13.8%) and Kinyui (19.0%)

There was considerable variation between isolates in the mean number of testes, as shown by the following means, from worms recovered from mice; Mitheo 5.6,

Mwea 6.0, Mitaboni 6.6, Rusinga Island 7.4, Kalala 6.0, Kinyui 6.8 and Kibwezi 8.1. However, only the difference between Kibwezi and Mitheo isolates was statistically significant. For any one isolate there was no difference between worms recovered from mice and those from baboons.

With tissue egg counts, variation was also recorded between isolates of parasite studied. The highest counts were found in Kibwezi and Kalala isolates, and the lowest counts in Mitheo and Rusinga Island. For egg deposition in the liver significant differences were found between the following isolates: Mitheo and Rusinga Island, Mitheo and Kinyui, Mitaboni and Kalala, Rusinga Island and Kalala, Kalala and Kinyui. With egg deposition in the small intestine significant differences were found between the following isolates: Mitheo and Kalala, Mwea and Kalala, Rusinga Island and Kalala, and Kalala and Kinyui. With egg deposition in the large intestine, significant differences were found between the following isolates: Mitheo and Kinyui, Mwea and Kalala, Mwea and Kinyui, and Kalala and Kinyui.

It was found that in mice, the highest number of eggs were deposited in the small intestines,

followed by liver and large intestines. In baboons, the highest numbers were deposited in the large intestines, followed by liver and small intestines.

The results of starch gel electrophoresis and gel electrofocusing have shown some variations in the enzymes phosphogluco isomerase, phosphogluco-mutase and malate dehydrogenase of S. mansoni worms. The Kinyui isolate showed 2 or 3 PGM bands while all the others showed 2 bands for worms recovered from mice. For PGI Kinyui isolate had 3 or 4 bands as compared to all the other isolates which had 3 bands. Kibwezi isolate was found to have 2 or 4 isoenzyme bands while the other isolates had 2 bands for worms recovered from baboons. Repeat experiments showed that bands were characteristic of isolates studied, for all the three enzymes.

In conclusion, it was evident from this work that variation occurs in the various biological characters studied, but it is only in its preliminary stages. While no real differences were recorded between worms recovered from CBA and Albino mice, host effect was seen between mice and baboons for isoenzyme profiles.