

Comparative efficiency of *Biomphalaria pfeifferi* and *B. sudanica* as intermediate host snails for *Schistosoma mansoni* in Kenya.

In Kenya, an estimate of 6 million people are infected with schistosomiasis with >30 million people at risk of infection. *Schistosoma mansoni* is commonly transmitted by *Biomphalaria pfeifferi*, an inhabitant of streams and small water bodies, and *B. sudanica*, which is mostly found along lakeshores, mainly in Lake Victoria. Recent studies have accentuated the role of infected snails in maintaining transmission as some snails can survive for over a year shedding cercariae daily. We sought to determine if these two snail species may differ with respect to the efficiency with which they support *S. mansoni* infections. We exposed field-derived *B. pfeifferi* (Kirinyaga, central Kenya) and *B. sudanica* (Kisumu, western Kenya) to *S. mansoni* derived from human subjects from Kirinyaga or Kisumu. The reciprocal cross infection design allowed us to ascertain if local adaptation effects might influence infection outcomes. Juvenile (<6 mm shell diameter), young adult (6-9 mm) and adult snails (> 9 mm) were exposed, all to one miracidium/snail. Overall, *B. pfeifferi* consistently had higher infection rates than *B. sudanica* (39.6 - 80.7% vs. 2.4 - 21.5%), regardless of the source of *S. mansoni* or the size of the snails used. Allopatric *B. pfeifferi* - *S. mansoni* combinations had higher infection rates than sympatric combinations while *B. sudanica* showed the opposite trend. Infection rates were inversely proportional to snail size. Mean daily cercariae production was greater for *B. pfeifferi* exposed to sympatric than allopatric *S. mansoni* (62 –2465 and 100 – 1232, respectively), and this trend increased with snail size. Overall mean daily cercariae production amongst all *B. sudanica* was low (50–590) with no significant differences between sympatric or allopatric combinations, or among the different snail sizes ($p < 0.05$). In conclusion *B. pfeifferi* is more likely to become infected and to shed more cercariae than *B. sudanica*, suggesting that the per snail risk of perpetuating transmission in Kenyan streams and lacustrine habitats may differ considerably, with noteworthy implications for understanding transmission dynamics and planning control efforts.