

# Multi-Host Transmission Dynamics of *Schistosoma japonicum*: The China Perspective

Original Article

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The mathematical model by Riley et al [1], and earlier epidemiological data [2], on which it was formulated, suggest water buffaloes (*Bubalus bubalis*) do not play a significant role in the transmission of *Schistosoma japonicum* in Samar, the Philippines, and the authors imply that this may be the case for all other geographic foci of the parasite. However, extensive field-based research, bovine intervention trials using the highly effective anti-schistosome drug, praziquantel, and modelling [3-5] have provided strong evidence that water buffaloes are major reservoir hosts for *S. japonicum* transmission in southern China. This anomaly may be due to parasite genetic variation<sup>1</sup> or differences in cultural, farming and herding practices so that the environmental contamination of schistosome eggs by bovines may be less pronounced in the Philippines. Furthermore, the water buffalo (called caribou) in the Philippines is a smaller subspecies (*Bubalus bubalis carabanesis*) that may be less susceptible to schistosome infection. It should be stressed, however, that the procedures for faecal examination of bovines in the Philippines are different from those employed in China. In particular, the miracidial hatching test (MHT)<sup>3</sup> used routinely by the Chinese, is not used in the Philippines. The MHT involves visualization by eye of miracidia hatching from *S. japonicum* eggs in distilled water; 3 hatches (50g faeces per hatch) are routinely carried out and intensity of infection is then determined by microscopy following a filtration sedimentation procedure similar to the Danish Bilharziasis Laboratory (DBL) technique [6] used in the Samar Province study. Sensitivity analyses have been performed on the DBL-technique [7], but, to date, there has been no direct comparison of its diagnostic performance with that of the MHT. Such a study carried out on buffalo faecal samples from the Philippines would resolve the important issue of the sensitivity of the two tests. If the prevalence for *S. japonicum* in bovines in the Philippines has been underestimated, the conclusions of *S. japonicum* transmission dynamics in Samar may need to be revisited.

Furthermore, no bovine intervention trials have been performed in the Philippines, and so their true role in *S. japonicum* transmission is not yet known. This is clearly an area for future research being important not only for more fully understanding schistosome transmission dynamics in the Philippines but also for determining appropriate control options there that may involve the treatment and/or vaccination of bovines. Praziquantel treatment of bovines remains an important component of the national schistosomiasis control programme for China [5].

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**No competing interests declared.**

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