The giant freshwater prawn *Macrobrachium rosenbergii* alters background colour preference after metamorphosis from larvae to postlarvae: In association with nature of phototaxis

ABSTRACT

The giant freshwater prawn *Macrobrachium rosenbergii* larvae have apposition eyes and are positively phototactic, whereas the postlarvae (PL) have superposition eyes and are negatively phototactic. *M. rosenbergii* has colour vision as early as larval stage. We discovered that *M. rosenbergii* alters background colour preference after metamorphosis from larvae to PL in association with nature of phototaxis. The test circular glass aquaria covered with a pair of two-colour papers contained with a group of 100 larvae or 20 Pl, and the number of individuals in each colour background was recorded five times for each colour pair. The background colours tested were light blue, green, yellow, red, white and black. The numbers of larvae or PL in each colour background of different pairs were analysed by the Thurstone's law of comparative judgment. In the larvae, significant bias towards yellow was evident. In the PL, of the four pairings of black with other colours, all biased to black. The mean *z*-scores were highest for yellow in the larvae, and for black in the PL. To determine the possible background brightness preference of the larvae and PL, six different colour backgrounds were presented in pairs. The larvae significantly preferred light blue over dark blue, white over yellow and white over black. The PL exhibited reversed preference. The relationship between *z*-scores and light reflectance levels of five colour papers was significantly positive in the larvae and negative in the PL. The observed background colour preference was probably due to relative brightness rather than chromaticity difference.