

# Long term survival of 'damaged' *Nippostrongylus brasiliensis* adult worms in the testosterone-treated Indian soft-furred rat, *Millardia meltada*

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## Abstract

When testosterone-treated female *Millardia meltada* were infected with *Nippostrongylus brasiliensis*, adult worms persisted for over seven weeks. The kinetics of faecal egg counts showed a biphasic pattern having a transient decline at around two weeks post infection (p.i.). Thus the status of *N. brasiliensis* adult worms surviving in the small intestines of testosterone-treated *M. meltada* was examined. The fecundity and maturity of eggs in the uteri of female adult worms were examined at one, two, three and seven weeks p.i. Both the fecundity and maturity of eggs transiently decreased at two and three weeks p.i. and then completely recovered by seven weeks. Adoptive transfer of *N. brasiliensis* adult worms into naive recipients can discriminate the status of worms. Those obtained from the stable phase of a primary infection ('normal' worm) can establish and survive in the recipients, whereas those obtained at the time of expulsion ('damaged' worm) are rapidly expelled. Therefore, 300 each of *N. brasiliensis* adult worms collected from the testosterone-treated female *M. meltada* at one, two and seven weeks p.i. were transferred intraduodenally into normal rats to determine their status. Those collected at one week p.i. persisted for eight days, indicating that they were still 'normal'. In contrast, worms collected at two and seven weeks p.i. were expelled within four days, indicating that they had already been 'damaged'. Moreover, when the 'damaged' worms obtained from rats were intraduodenally transferred into testosterone-treated female *M. meltada*, they were not expelled, suggesting that testosterone-treatment affected the final expulsive step, but not the damaging process, of the mucosal defence of *M. meltada* against *N. brasiliensis* adult worms.

## Keywords

Indian soft-furred rat • *M. meltada* • *N. brasiliensis* • 'damaged' worm • testosterone