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Suspected bromadiolone resistance in *Bandicota bengalensis* (Gray & Hardwicke) from Andhra Pradesh, India: VKORC1 analysis

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The lesser bandicoot rat, *Bandicota bengalensis* (Gray & Hardwicke) is a major rodent pest affecting agriculture and public health in India. Bromadiolone, a second-generation anticoagulant rodenticide, is extensively used for community rodent control in rice-based ecosystems of the Godavari Delta, raising concerns over resistance development. This study assessed bromadiolone resistance in *B. bengalensis* populations from six villages in the Godavari districts of Andhra Pradesh using feeding mortality tests, blood clotting response assays, and VKORC1 gene sequencing. Of 152 individuals, 23.7% showed delayed mortality and prolonged clotting times, indicating emerging tolerance. Sequencing of suspected resistant rats did not reveal known VKORC1 resistance mutations, although *B. bengalensis* specific variants with high homology to *Rattus norvegicus* sequences were detected. The absence of classical VKORC1 polymorphisms suggests alternative biochemical mechanisms, such as cytochrome P450 mediated detoxification, may reduce susceptibility. This study provides the first experimental evidence of bromadiolone resistance in *B. bengalensis* in India, underscoring the need for regular resistance monitoring and integrated rodent management to prevent control failures in agricultural landscapes.

Keywords: *Lesser bandicoot rat*, Blood clotting response, Rice, Integrated rodent management