Prevalence of rodenticide resistance in Singapore's rat population
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Rodenticide resistance poses a major challenge for vector control. Single Nucleotide Polymorphisms (SNPs) in the gene VKORC1 have been associated with anticoagulant rodenticide resistance in rats. Although extensive studies have been carried out mainly in Europe, few studies have been carried out in southeast Asia. The aim of this study was to characterise the frequency and distribution of VKORC1 SNPs in the rat population in Singapore. DNA was extracted from forty-two (42) *Rattus norvegicus* and *Rattus rattus* spp. tail samples collected from various parts of Singapore. Exon 3 of VKORC1 was amplified by PCR prior to Sanger sequencing. Electropherograms of the results were analysed for SNPs and codons of interest were located in exon 3, mainly 139, 128 and 120. There were no polymorphisms in VKORC1 exon 3 of the rat samples screened. However, four samples were found to have either heterozygous or homozygous missense mutation for codon 143 (Ala>Val). We did not detect any evidence of VKORC1 mutations associated with anticoagulant rodenticide resistance in the samples we have screened. More extensive sampling will be carried out to determine if anticoagulant rodenticide resistance is present among rodent populations in Singapore.
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