



## Honeybee locomotion is impaired by Am-CaV3 low voltage-activated Ca(2+) channel antagonist

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### Résumé en anglais

Voltage-gated Ca(2+) channels are key transducers of cellular excitability and participate in several crucial physiological responses. In vertebrates, 10 Ca(2+) channel genes, grouped in 3 families (CaV1, CaV2 and CaV3), have been described and characterized. Insects possess only one member of each family. These genes have been isolated in a limited number of species and very few have been characterized although, in addition to their crucial role, they may represent a collateral target for neurotoxic insecticides. We have isolated the 3 genes coding for the 3 Ca(2+) channels expressed in *Apis mellifera*. This work provides the first detailed characterization of the honeybee T-type CaV3 Ca(2+) channel and demonstrates the low toxicity of inhibiting this channel. Comparing Ca(2+) currents recorded in bee neurons and myocytes with Ca(2+) currents recorded in *Xenopus* oocytes expressing the honeybee CaV3 gene suggests native expression in bee muscle cells only. High-voltage activated Ca(2+) channels could be recorded in the somata of different cultured bee neurons. These functional data were confirmed by *in situ* hybridization, immunolocalization and *in vivo* analysis of the effects of a CaV3 inhibitor. The biophysical and pharmacological characterization and the tissue distribution of CaV3 suggest a role in honeybee muscle function.

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### Liens

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