



The discovery of a novel sodium channel in the cockroach *Periplaneta americana*: evidence for an early duplication of the para-like gene.

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Titre	The discovery of a novel sodium channel in the cockroach <i>Periplaneta americana</i> : evidence for an early duplication of the para-like gene.
Type de publication	Article de revue
Auteur	Moignot, Bénédicte [1], Lemaire, Christophe [2], Quinchart, Sophie [3], Lapied, Bruno [4], Legros, Christian [5]
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Résumé en anglais	Voltage-gated sodium channels (Na(v) channels) belong to a superfamily of ion channels which play an essential role in membrane excitability. Only one gene encoding Na(v) channels has been characterized so far in insects. Here, we have cloned one full-length cDNA encoding a conventional insect Na(v) channel (PaNa(v)1) and two full-length cDNAs encoding putative insect Na(v) channels (PaFPC1 and PaFPC2) in <i>Periplaneta americana</i> , a model insect for neurophysiological studies. The ORFs of PaFPC1 and PaFPC2 contained 4662 bp and encoded 1553 amino acid residues, and the ORF of PaNa(v)1 contained 6153 bp and encoded 2051 amino acid residues. PaFPC1 and PaFPC2 are two isoforms, which differ by eight single amino acid substitutions. PaFPC1 shares 37.5-55% protein identities with known insect Na(v) channels, while PaNa(v)1 shares 70-97.5% protein identities with these latter. Both PaFPC1 and PaFPC2 possess the molecular hallmarks of Na(v) channels except the motif involved in fast inactivation. Contrary to PaNa(v)1 transcripts which are expressed mainly in the central nervous system, those ones of PaFPC are also expressed in non-neuronal tissues (muscles, gut and mushroom-shaped accessory glands). A detailed phylogenetic analysis confirmed that PaNa(v)1 and PaFPC are evolutionarily closely related to insect Na(v) channel genes.

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