



Characterization of tyramine β -hydroxylase, an enzyme upregulated by stress in *Periplaneta americana*.

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Résumé en anglais	<p>Octopamine (OA) is an important neuroactive substance that modulates several physiological functions and behaviors of various invertebrate species. This biogenic monoamine, structurally related to noradrenaline, acts as a neurotransmitter, a neuromodulator, or a neurohormone in insects. The tyramine β-hydroxylase (TBH) catalyzes the last step in OA biosynthesis and thus plays a key role in the regulation of synthesis and secretion of OA in neurons. The aim of this study was to characterize TBH in the cockroach <i>Periplaneta americana</i> and to get a better understanding of its regulation under stress conditions in this insect. First of all, five full-length cDNAs encoding TBH isoforms were cloned from the nerve cord of the physiological model <i>P. americana</i>. PaTBH transcripts were found mainly expressed in nervous tissues and in octopaminergic dorsal unpaired median neurons. In addition, a new ELISA assay was developed so as to allow determination of both OA level and TBH activity in stressed cockroaches. Mechanical stressful stimulation led to a significant increase in TBH activity after 1 and 24 h, with a higher induction after 1 h than after 24 h. Thus, TBH could be considered as a promising biomarker of stress in insects rather than OA.</p>
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Liens

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