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パラオキソンはニコチン性アセチルコリン受容体を活性化して振戦を発現する

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Paraoxon (POX), a toxic metabolite of parathion, acts as a cholinesterase inhibitor. We performed behavioral studies to clarify the mechanisms for POX-induced tremor in mice. POX dose-dependently caused whole body tremor, which was inhibited by mecamylamine (nicotinic receptor antagonist), but not by trihexyphenidyl (muscarinic receptor antagonist). Expression analysis of Fos protein, a biomarker of neural excitation, showed that POX region-specifically activated the dorsal lateral striatum (dlST) and inferior olive (IO). POX-induced Fos expression in the dlST and IO was also blocked by mecamylamine. Our results suggest that POX provokes tremor by activating nicotinic acetylcholine receptors in the dlST and/or IO.