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The human acrosome reaction is highly sensitive to inhibition by cyclodiene insecticides

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The mammalian sperm acrosome reaction (AR) is essential to fertilization. It can be initiated in vitro by progesterone, a putative physiological initiator that helps to activate sperm GABA(A) receptor/chloride channels and by glycine, a substitute for the egg zona pellucida, which activates sperm glycine receptor/chloride channels. Even at 1 nM (0.41 ng/ml or 0.41 ppb), chlordane and endosulfan, chlorinated cyclodiene blockers of insect neuronal GABA(A) receptor/chloride channels, strongly inhibited the AR initiated by progesterone or glycine. Inhibition of the latter was also seen at 0.1 nM chlordane and endosulfan, but neither cyclodiene inhibited either AR initiator at 0.01 nM. Inhibitory concentrations of these cyclodienes are well within the range detected in human and wildlife tissue and fluids as a result of environmental contamination.

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Appl. Envir. Microbiol., July 1, 2000; 66(7): 2822 - 2828.
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