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JOURNAL ARTICLE

Phosphatidylcholine enhances the acrosomal responsiveness of human sperm

N. L. Cross

Department of Physiological Sciences, Oklahoma State University, Stillwater 74078-0353.

Supplementing bovine serum albumin-containing medium with phosphatidylcholine (PC) accelerated the *in vitro* development of human sperm acrosomal responsiveness. Responsiveness was assessed by exposing the sperm to progesterone. The maximum effect was produced by incubation with 100 micrograms PC/ml, which resulted in 40% (23-56%) (mean, 95% confidence limits) of the sperm becoming responsive to progesterone at 24 hours, compared to 23% (10-40%) of control sperm. Enhancement was apparent after as little as 6 hours of incubation *in vitro*, and the number of responsive sperm was still increasing at the last time point tested (30 hours). PC had no apparent ill effects; it did not alter the percentage of motile sperm or the percentage of sperm stained with the supravital stain, Hoechst 33258. Enhanced responsiveness required prolonged incubation in PC, because PC was not effective when it was only applied at the same time as progesterone. Lysophosphatidylcholine did not enhance acrosomal responsiveness when used at concentrations from 10 ng/ml to 100 micrograms/ml, indicating that the effect of PC was not due to trace amounts of lysophosphatidylcholine. PC also increased the response of sperm to the Ca²⁺/H⁽⁺⁾-exchanging ionophore, ionomycin, suggesting that PC modifies an event that is coincident with or subsequent to the rise in intracellular free Ca²⁺ that is triggered by progesterone.

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