

Studies of lysophospholipids related to the hamster sperm acrosome reaction in vitro

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Phospholipase A2 and lysophospholipids have been implicated in the mammalian sperm acrosome reaction. In this study we further investigated the role of this enzyme and lysophospholipids on the acrosome reaction of hamster spermatozoa. Hamster epididymal spermatozoa were incubated under capacitation and acrosome reaction-inducing conditions. After 3.0 and 3.5 h, the spermatozoa were treated with different doses of lysophosphatidylcholine for 12 min. Then the percentage of motility, hyperactivation, and acrosome reaction was evaluated by light microscopy. Lysophosphatidylcholine, 10 μ g/ml, was the highest acrosome reaction-inducing dose without an effect on sperm motility. Lysophosphatidylcholine induced the acrosome reaction only when added to spermatozoa capacitated for a minimum of 2 h. This effect was apparent after 1 min of its addition and reached a plateau after 5 min. Lysophosphatidylethanolamine and lysophosphatidylinositol were also effective in inducing the acrosome reaction.