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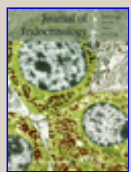
JOURNAL ARTICLE

Acrosome reaction in dog sperm is induced by a membrane-localized progesterone receptor

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The aim of this study was to investigate whether the dog sperm acrosome reaction can be induced by progesterone and whether the action of progesterone is mediated by binding of progesterone to a receptor on the sperm plasma. Progesterone-BSA conjugate labeled with fluorescein isothiocyanate (P-BSA-FITC) in combination with a vital stain, ethidium homodimer, was applied to visualize the presence of the progesterone receptor on living spermatozoa. Ten mM progesterone increased the acrosome reaction in viable spermatozoa over time from 3 +/- 1% at 0 hours to 69 +/- 8% at 6 hours (six dogs). In freshly ejaculated sperm from six dogs, P-BSA-FITC staining was observed in 13 +/- 1% of the viable, acrosome-intact cells, as characterized by bright fluorescence over the entire apical region. The proportion of P-BSA-FITC-stained, viable, acrosome-intact cells increased to 84 +/- 11% following 7 hours incubation in a low-calcium medium. In contrast, the majority (72 +/- 3%) of fresh epididymal sperm already demonstrated bright P-BSA-FITC staining. Apparently, epididymal spermatozoa already possess the progesterone receptor. The receptor is masked at ejaculation and subsequently gradually exposed.

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