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Characterization of the Sperm Penetration Bioassay

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Parameters influencing the zona-free hamster egg bioassay for human sperm fertility potential were evaluated. Egg recovery from hamsters superovulated at random with respect to their estrous cycle was enhanced when the PMS-HCG time interval was lengthened. Prolonged egg exposure to trypsin during zona removal did not adversely affect egg viability. A swim-up procedure for washing human sperm was superior to a centrifugation-resuspension technique, although the yield of washed cells was low. The kinetics of sperm capacitation were examined for six different donors over a 22-hour time period. Capacitation in 0.3% albumin was maximal after 6.5 hours, and penetration scores in five of the six donors declined thereafter. In 3.5% albumin, capacitation was slower with peak penetration levels observed at 13.5 hours. Much higher penetration was noted when sperm, capacitated in 3.5% albumin, were compared with those exposed to 0.3%. Specific recommendations for optimizing bioassay outcome are summarized.

Key words: hamster egg bioassay, human sperm, infertility, zona-free

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