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## JOURNAL ARTICLE

# Synchronous assessment of sperm motility and fertilizing ability in the hamster following treatment with alpha-chlorohydrin

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To investigate the relationship between sperm motion parameters and fertilizing ability, a model was developed to assess both of these endpoints synchronously using a toxicant that inhibits sperm motion. alpha-Chlorohydrin (ACH) was administered daily for 4 days to male hamsters at 0, 33, 49, 66, and 83 mg/kg body weight. These males were then allowed a 45-minute breeding period with untreated estrus females on the morning of day 5. One hour after breeding, sperm samples were surgically recovered from the uteri of the females for motility analysis. Six hours later, eggs were flushed from the oviducts and evaluated for fertilization. Cauda epididymal sperm were also collected from the males shortly after breeding. Proportions of motile and progressively motile sperm were manually quantified, and overall sperm velocity and the velocity of representative vigorously swimming sperm in both the uterine and epididymal samples were measured by computer-aided sperm analysis. Significant decreases in in vivo fertilization rates and epididymal sperm motion parameters were observed at 66 and 83 mg/kg ACH, whereas uterine sperm motion was adversely affected at all ACH dosages used. All sperm motion parameters except the percentage of motile sperm in the epididymis were significantly correlated with fertilization rates by both linear and logistic regression. Overall, uterine and epididymal sperm endpoints predicted fertilizing ability comparably well. Stepwise multiple linear regression gave a model containing epididymal sperm velocity (EVCL) and uterine sperm percent motility (UMOT) with an R<sup>2</sup> value of 0.649. Stepwise multiple logistic regression gave models containing EVCL alone and EVCL and UMOT in binary (fertile/infertile) and quantal models, respectively.

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