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JOURNAL ARTICLE

# Measurement of human sperm intracellular water volume by electron spin resonance

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An electron spin resonance technique using the spin label tempone and the broadening agent potassium chromium oxalate was used to measure the water volume of human sperm. The toxicity of tempone (5 mmol/L) and potassium chromium oxalate (50 mmol/L) to sperm was measured over a time span of 120 minutes using computer-assisted semen analysis. Tempone had no effect on any computer-assisted semen analysis parameters, including motility. Potassium chromium oxalate reduced sperm motility by an average of 24% during the first 30 minutes of exposure. After selection by swim-up and correction for the presence of dead cells and cytoplasmic droplets, a water volume of 20.0 +/- 2.9 microns<sup>3</sup> was obtained. This yields a total volume of 33.9 microns<sup>3</sup> if a water compartment of 59% by volume is assumed. These results are consistent with other shape-independent techniques for measuring volume, but larger than the generally accepted optical and electronic particle counter sizes.

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