Journal of Andrology, Vol 8, Issue 1 41-47, Copyright © 1987 by The American Society of Andrology

JOURNAL ARTICLE

Cryosurvival of human spermatozoa frozen in eight different buffer systems

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The present study was conducted to ascertain optimal cryoconditions for human spermatozoa by comparing the relative cryoprotective efficiency of eight buffer systems and assessing various cryovials and thaw rates under two freeze rates. Spermatozoa that were cryopreserved in one of four zwitterion buffers (TES-Tris-citrate-egg yolk-glycerol; TES-Tris-citrate-I) maintained higher progressive motility at 0, 1, 2, and 4 hours post-thaw as compared to cells frozen in glycerol only, citrate-egg yolk-glycerol and TES-Tris-citrate-egg yolk without glycerol (TES-Tris-citrate-III; P less than 0.01). Freezing in TES-Tris-citrate-I also resulted in spermatozoa that penetrated the furthest distance through cervical mucus and possessed the highest percent live spermatozoa when compared to other cryoprotective media. Spermatozoa were analyzed for their ability to penetrate zona-free hamster ova and no difference was found between buffers when the assay was corrected for progressive motility. After removal of seminal plasma/buffers and incubation for 2 hours in BWW, TES-Tris-citrate-II and TES-Tris-citrate-milk showed the greatest sperm longevity (P less than 0.05). Pooled semen was extended in TES-Tris-citrate-I and frozen in straws or ampoules in static N2 vapor or in pellets on dry ice. Thaw bath temperatures ranged from 0 to 37 C. Post-thaw progressive motility and cervical mucus penetration were similar in all treatment groups. In conclusion, the present results indicate the use of TES-Tris-citrate-I for cryopreservation of human spermatozoa. With this optimal cryoprotective buffer, the containers and thaw rates used have little effect on human sperm cryosurvival.

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