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Cryopreserved Human Sperm Showed Enhanced Motility via Temporary Energy Restriction

Abstract:
As male fertility rates have declined in recent years, this study explores potential interventions to improve sperm motility. Semen samples were collected, assessed, and cryopreserved. After several months, motility was re-evaluated.

Methods: This study included semen samples from 110 men undergoing fertility evaluation. Based on motility, samples were divided into normozoospermic (control) and asthenozoospermic (test) groups. All samples were cryopreserved, thawed, and cryoprotectants removed, followed by semen analysis to establish baseline motility. Samples were then exposed to culture media at incrementally higher concentrations, with incubation time, respectively. Motility was assessed at each stage to evaluate the effect of nutrient reintroduction after energy restriction

Results: Sperm motility in the asthenozoospermic group increased following exposure to culture media with increasing concentration at varying time intervals. The highest motility of 48% was recorded at 500 µL/mL culture media after 60 minutes.
Conclusion: Sperm motility can be improved by subjecting thawed semen samples to temporary energy restriction followed by controlled reintroduction of nutrients. The findings indicate that initial nutrient deprivation, when followed by timed exposure to culture media, resulted in measurable enhancement of motility. This suggests that semen samples need not be used immediately after thawing but may first undergo this treatment to achieve higher motility rates.
Keywords: Semen analysis, Asthenozoospermia, Normozoospermia, culture media, and incubation.

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