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Human sperm DNA oxidation, motility and viability in the presence of L-carnitine during in vitro incubation and centrifugation

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Abstract: In vitro incubation and centrifugation is known to decrease human sperm quality. In the human body, besides its antioxidant effects, L-carnitine (LC) facilitates the transport of activated fatty acids from the cytosol to the mitochondrial matrix. In this study, we investigated the effect of LC on human sperm motility, viability and DNA oxidation after incubation and centrifugation, following the sperm preparation protocols of assisted reproduction. Normozoospermic semen samples (n = 55) were analysed according to the World Health Organization (WHO) guidelines. LC concentrations that are not toxic to spermatozoa as determined by sperm motility and viability were standardised after 2 and 4 h of incubation at 37 ?C. Semen samples to which the optimal LC concentrations were added were also centrifuged for 20 min at 300 g and analysed for sperm motility, viability and DNA oxidation. Sperm motility was improved at 0.5 mg ml(-1) LC after incubation and centrifugation with 5 ? 10(6) sperm ml(-1). Higher concentration of LC (50 mg ml(-1)) significantly decreased sperm motility and viability. LC did not alter the baseline of sperm DNA oxidation during both incubation and centrifugation. In conclusion, LC may enhance sperm motility following incubation and centrifugation, while it might not affect sperm viability and DNA oxidation.