

Journal of Andrology, Vol. 24, No. 3, May/June 2003
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Marked Differences in Protamine Content and P1/P2 Ratios in Sperm Cells From Percoll Fractions Between Patients and Controls

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The various sperm cell types present in a simple ejaculate differ in their motility and morphology. However, little is known about the nuclear maturity of these sperm cells and their relationship with morphological and motile characteristics. Protamines are considered a good marker of sperm nuclear maturity since they are added to the DNA in the last stage of spermatogenesis. We have analyzed the P1/P2 ratio and the protamine content of subpopulations of human spermatozoa at different stages of maturation, isolated by density gradient centrifugation of ejaculated spermatozoa obtained from 3 groups of patients from our Assisted Reproduction Unit: 10 men of proven fertility, 12 oligozoospermic men, and 13 asthenozoospermic men. Four different fractions (F2–F5) were collected from the top to the bottom of the Percoll gradient. Differences in the motion and morphology were found between the fractions in each of the groups studied, with fraction F5 being the one with the best morphology and motility. However, no significant differences in the P1/P2 ratio were found between fractions within the same group of samples, indicating that the P1/P2 ratio and the amount of protamines are relatively independent of the morphology and motility of sperm cells. In contrast, statistically significant differences were found in the P1/P2 ratio and in the relative amount of protamines between the 3 groups.

Key words: Chromatin condensation, male infertility, Percoll gradients, sperm chromatin, sperm morphology, sperm motility

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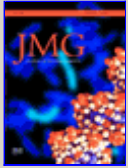
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