

CHARACTERIZATION OF THE KISSPEPTIN SYSTEM IN HUMAN SPERM

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Introduction: Kisspeptins, the products of the KISS1 gene, play an essential role in the regulation of spermatogenesis acting primarily at the hypothalamic level of the gonadotropic axis. However, possible direct effects of kisspeptin on sperm function have not been studied as yet.

Objective: To investigate the presence and function of kisspeptin and its receptor, KISS1R, in human spermatozoa.

Materials and methods: Semen samples were obtained from thirty normozoospermic human donors and capacitated by centrifugation through a discontinuous density gradient followed by swim-up. We analyzed the expression of kisspeptin and its receptor (KISS1R or GPR54) in sperm cells by immunofluorescence techniques and evaluated the effects of exposure to kisspeptin on sperm motility. Motility parameters were measured using a computer-assisted sperm analysis (CASA) system.

Result(s): Using immunocytochemistry, we found that kisspeptin and its canonical receptor, KISS1R, were present in human spermatozoa where they localized mainly in the sperm head and around the neck. Importantly, kisspeptin modulated sperm progressive motility causing a biphasic (stimulatory and inhibitory) response. These effects of kisspeptin were inhibited in the presence of peptide 234, a recently available antagonist of KISS1R.

Conclusion. The present data show for the first time that kisspeptin and its receptor are present in human spermatozoa and participate in the regulation of sperm function.