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# Idiopathic Infertility: Effect of Palmitoylethanolamide (a Homologue of Anandamide) on Hyperactivated Sperm Cell Motility and $Ca^{2+}$ Influx

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The goal of this study was to examine the effect of palmitoylethanolamide (PEA) on the capacitation process and hyperactivated motility (HA) in idiopathic infertile men. Our data show the effect of PEA on the kinematic parameters of sperm cells from idiopathic infertile men during the capacitation of spermatozoa in vitro, both in the presence and absence of 2.5 nM PEA, a molecule physiologically present in human reproductive tracts. Two groups of sperm cells were identified. In group I (36 ± 14 x $10^6$ cells/mL), PEA significantly increased some motility parameters and HA during capacitation. In group II (58 ± 18 x $10^6$ cells/mL), PEA did not significantly modify motility parameters and HA. Fura 2 AM (acetoxymethyl ester derivative of fura 2) measurements demonstrated that PEA increased external $Ca^{2+}$ influx (which modulates HA) in group I, while no change was measured in group II. In conclusion, our data indicated that PEA modulated certain physiological sperm functions that are involved in fertilization; in particular, we showed that PEA modulated for HA in men with low sperm kinematic parameters.

Key words: Kinematic parameters, hyperactivated motility, fura 2 AM

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