Proceeding
Open Access

Effects of sildenafil on sperm DNA structure

Proceeding

We evaluated the effects of sildenafil on sperm motility and sperm DNA fragmentation index (DFI). A semen sample was collected from each of 20 men (group A) selected from a general population of men visiting a urology outpatient clinic. After a swim up procedure, motile spermatozoa populations were collected from each sample. Then two 1ml-aliquots (C and EXP aliquots) containing washed spermatozoa suspended in a culture medium were prepared from each of the above 20 men. Sildenafil was added to EXP aliquots at a final concentration equal to 0.67microM. C aliquots served as control aliquots. Each pair of aliquots was incubated at 37°C under 5% carbon dioxide for 8 hours. At the end of the incubation period the % motile sperms (%MS) and the DFI as measured with the sperm chromatin structure assay were evaluated (Asian J Androl 2011,13:69).

Within group A, the mean value of the DFI was significantly larger in Exp aliquots (mean±SD:29.17±11.67%) than in C aliquots (22.45±11.17%) (Wilcoxon test for paired observations; $P<0.05$). On the other hand, within the group A, there were no significant differences in the mean value of %MS between Exp aliquots and C aliquots. It may be suggested that elevation of the second messenger cGMP level due to inhibition of PDE5 by sildenafil activates a nuclear cGMP-dependent protein kinase PKG with an overall detrimental effect on sperm chromatin structure. Alternatively we may hypothesize that the effect of sildenafil on sperm DNA is due to the formation of hydrogen bonds between the C=O groups of the molecule of sildenafil and the NH_2 group in the guanine moiety of the DNA. The latter hypothesis is strongly supported by previous research efforts indicating a similar mechanism responsible for the interaction between sildenafil with salmon sperm DNA (Biosensors and Bioelectronics 22,2007,2471).

Volume 5 Issue 4 - 2017

I Giakoumakis, I Giannakis, D Baltogiannis, L Lazaros, D Daphnis, F Dimitriadis, A Takenaka, N Sofikitis

Mediterranean Fertility Center & Genetic Services, Greece

Correspondence: Ioannis Giakoumakis, OB-GYN, Clinical Director of Mediterranean Fertility Institute (Surrogacy, Egg Donation, In Vitro Fertilization Program), Alexandra General Hospital in Athens, 24 Zimvrakakidon St., Chania, Greece, Email igiakoumakis@ivfgreece.com

Received: July 10, 2017 | **Published:** July 10, 2017

This research has been co-financed by the European Union (European Social Fund-ESF) and Greek national funds through the Operational Program "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF)-Research Funding Program: Heracleitus II. Investing in knowledge society through the European Social Fund.

Acknowledgements

None.

Conflict of interest

The author declares no conflict of interest.