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Review of the Methods for Evaluating 8-Hydroxy, 2-Deoxiguanosine in Sperm Nuclei

Chenlo P, Curi S, Pugliese M and Mendeluk G*
Laboratory of Male Fertility, Department of Clinical Biochemistry, Faculty of Pharmacy and Biochemistry, University of Buenos Aires, Argentina

***Corresponding author:** Mendeluk G, Laboratory of Male Fertility, Department of Clinical Biochemistry, Faculty of Pharmacy and Biochemistry, University of Buenos Aires, Argentina

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Short Communication

An expanding body of evidence now supports a role for oxidative stress as a significant cause of male infertility [1]. We have been working in the assessment of DNA fragmentation and its clinical value [2]. For a while we try to go far beyond this concept approaching the study of oxidative DNA damage and the measurement of biomarkers of the event, in particular the determination of 8-hydroxy,2-deoxiguanosine (8-OHdG).The quantification of oxidized nucleobases and nucleosides can be divided into chemical and biochemical methods. The former can roughly be subdivided into High-performance liquid chromatography (HPLC) with electrochemical detection (LC-EC), HPLC with amperometric detection, gas chromatography–mass spectrometry (GC-MS)/electrospray and Liquid chromatography-tandem mass spectrometry (LC-MS/MS) methods [3]. Being the last one the elegible one as it could be validated to determine 8-OHdG released from isolated DNA [4]. The biochemical assays includes the immunofluorescence [5] and the ELISA [6].

Due to the fact that the chemical methods are not accessible to clinical laboratory we chose the last one to be included as diagnostic clinical methods once validated by the formers. According to our experience we would like to point out that the immunofluorescence detection methods lack specificity and sensitivity, and there is a growing consensus that these methods should be questioned and not used. In our hands the mark could be found either in the cell or in its microenvironment. Indeed the cell may be releasing the 8-OHdG from spermatozoa via the base excision repair pathway by OGG1 (8-oxoguanine DNA glycosilase [7]). In our recent standardization the lacking capabilities of the ELISA assay are evident and support this conclusion. Although physicians are willing to have this information the Clinical Andrology Laboratory is not up to report the measurement of 8-OHdG.

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