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Optimization of Signalling Biomarkers in Detecting Male Infertility

Syazana Mohamad Zahri[1], *Suzanah Abdul Rahman*[1,*], *Zafri Azran Abdul Majid*[2], *Nur Amalina Ahmad*[1], *Nadia Hanis Abdul Samat*[1] & *'Afif Raihan Abdullah*[1]

[1]Department of Biomedical Science, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia
[2]Department of Diagnostic Imaging and Radiotherapy, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia

ABSTRACT

Objectives/Research Problem: To detect potential signals of fertility biomarkers from non-invasive samples in male reproductive function after X-ray and light exposure to Sprague-Dawley rats.

Materials and Method: Male Sprague-Dawley rats with each group (n=6) were exposed to whole body irradiation to high (2.5Gy), medium (0.2Gy) and low (0.05Gy) doses of X-ray. Another group were exposed to continuous light to induce stress. Positive control group were treated with cisplatin and corticosterone while negative control group was left with no intervention. Sampling of blood, saliva and urine will be done prior to exposure and 56 days after exposure. These hormones level in the samples was measured using enzyme-linked immunosorbent assay (ELISA) kit. Histological assessment of the testes and spermatozoa quality were assessed using haematoxylin and eosin (H&E) stain and spermatozoa quality such as sperm count and sperm motility were done together with acridine orange staining to assess DNA. Using the saliva and urine samples, specific signals were captured by transducers, amplified and processed to capture data that reflects the hormone levels. The signals were compared and optimized to produce sensitive tools.

Results and Discussion: The expected results was that the X-ray and prolonged light exposure can affect testosterone level that showed reduced man fertility. The presence of this biomarkers in urine and saliva samples can be used to develop diagnostic device/kit.

Conclusion: Development of biosensor using significant biomarkers in potentially non-invasive samples can be used in management of infertility.

KEYWORDS: Biomarkers, Signal, Male Reproduction, Fertility

*CORRESPONDENCE: arsuzanah@iium.edu.my