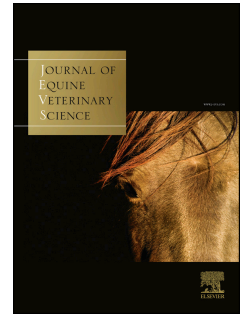


# Accepted Manuscript

Influence of Dioxin (TCDD) on the In Vitro Characteristics of Equine Gametes

Agnieszka Nowak, Joanna Kochan, Wojciech Niżański, Agnieszka Partyka, Roland Kozdrowski, Olga Rodak, Małgorzata Tarnowska, Wiesława Młodawska, Anna Migdał, Maciej Witkowski



PII: S0737-0806(17)30514-2

DOI: [10.1016/j.jevs.2017.11.002](https://doi.org/10.1016/j.jevs.2017.11.002)

Reference: YJEVS 2416

To appear in: *Journal of Equine Veterinary Science*

Received Date: 28 June 2017

Revised Date: 5 November 2017

Accepted Date: 6 November 2017

Please cite this article as: Nowak A, Kochan J, Niżański W, Partyka A, Kozdrowski R, Rodak O, Tarnowska M, Młodawska W, Migdał A, Witkowski M, Influence of Dioxin (TCDD) on the In Vitro Characteristics of Equine Gametes, *Journal of Equine Veterinary Science* (2017), doi: 10.1016/j.jevs.2017.11.002.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**Influence of dioxin (TCDD) on the *in vitro* characteristics of equine gametes**

Agnieszka Nowak<sup>1</sup>, Joanna Kochan<sup>1</sup>, Wojciech Nizański<sup>2</sup>, Agnieszka Partyka<sup>2</sup>, Roland Kozdrowski<sup>2</sup>, Olga Rodak<sup>2</sup>, Małgorzata Tarnowska<sup>2</sup>, Wiesława Młodawska<sup>1</sup>, Anna Migdał<sup>1</sup>, Maciej Witkowski<sup>1</sup>

<sup>1</sup>University of Agriculture in Krakow, Faculty of Animal Sciences,  
Institute of Veterinary Sciences, Al.Mickiewicza 24/28 30-059 Krakow, Poland

<sup>2</sup>Wrocław University of Environmental and Life Sciences, Faculty of Veterinary Medicine,  
Department of Reproduction and Clinic of Farm Animals,  
pl. Grunwaldzki 49, 50-366 Wrocław, Poland

Corresponding autor: Joanna Kochan, e-mail: kochanjoanna@wp.pl, tel +4812 662 41 13

**Abstract**

The aim of this study was to assess the effect of different concentrations of TCDD on selected parameters of equine gametes under controlled *in vitro* conditions. Assessments covered maturation of oocytes as well as sperm cell function and structure.

In the first part of experiment the influence of different concentration of TCDD: 0.32ng, 3.2ng, 32ng/ml on *in vitro* maturation of equine oocytes was evaluated. During *in vitro* maturation, 28,38% of the oocytes reached the metaphase II stage with the lowest concentration of TCDD (0.32 ng/ml) and only 5,14% at a concentration 3.2 ng/ml. In group, with the highest concentration of TCDD in the medium (32 ng), metaphase II oocytes were not observed. In the second part of experiment was evaluated the influence of TCDD (0.32ng, 3.2ng, 32ng/ml) on sperm parameters: motility, plasma membrane integrity, acrosome integrity, Mitochondrial activity, lipid peroxidation, apoptosis and chromatin status. The present study demonstrates that moderate concentrations of TCDD may activate population of motile sperm cells under *in vitro* conditions with no influence on sperm cell structure nor LPO. Moreover, the modulation of motility function of sperm was confirmed by detection of the evident increase of cell number with high mitochondrial potential. Dioxins exert negative impact on both female and male reproductive systems. Thus, an overall analysis of both systems will advance scientific knowledge on the impact of toxic agents on the reproductive system.

**Keywords:** equine, oocytes, IVM, TCDD, dioxin, spermatozoa,

Download English Version:

<https://daneshyari.com/en/article/8483268>

Download Persian Version:

<https://daneshyari.com/article/8483268>

[Daneshyari.com](https://daneshyari.com)