Title	Effects of fungicide 'Mancozeb' on bovine spermatozoa
Author(s)	Krishanthe, KAC; Abegunawardana, WW; Rathnayake, C; Wijayagunawardane, MPB; Lee, KF; Kodithuwakku, SP
Citation	The 2014 Peradeniya University International Research Sessions (iPURSE), Kandy, Sri Lanka, 4-5 July 2014. In Conference Proceedings, 2014, p. 256, abstract no. 163
Issued Date	2014
URL	http://hdl.handle.net/10722/217917
Rights	Creative Commons: Attribution 3.0 Hong Kong License

Abstract No: 163 ***Health and Hygiene***

EFFECTS OF FUNGICIDE 'MANCOZEB' ON BOVINE SPERMATOZOA

K.A.C. Krishanthe[1], W.W. Abegunawardana[2], C. Rathnayake[3], M.P.B. Wijayagunawardane[1], K.F. Lee[4] and S.P. Kodithuwakku[1]*

[1]Department of Animal Science, Faculty of Agriculture, University of Peradeniya, Sri Lanka
[2]Central Artificial Insemination Station, Kundasale, Kandy, Sri Lanka
[3]Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Peradeniya, Sri Lanka
[4]Department of Obstetrics and Gynaecology, LKS Faculty of Medicine, The University of Hong Kong, Hong Kong
**surangap@pdn.ac.lk*

Fungicides are used to maximize the production and productivity of modern agriculture. Present work was undertaken to investigate the effect/s of Mancozeb fungicide on bovine spermatozoa. Semen samples were obtained from Jersey bulls (n=6) at the Central Artificial Insemination Station, Kundasale. Preliminary studies were carried out to determine the effective dose and incubation time using 0.01µg/ml, 0.1µg/ml, 1µg/ml and 10µg/ml of pure Mancozeb and 1.0 µg/ml commercial Mancozeb concentrations during 1-4 hours of incubation periods. Sperm motility parameters were investigated using a Computer Assisted Sperm Analysis (CASA) system. Further functional analyses were performed to test the Acrosine Proteolytic Activity (APA) and acrosome integrity of the exposed spermatozoa. Based on the preliminary data, 1 µg/ml of Mancozeb and two hours of incubation were selected as the optimum dose and time combination.

CASA parameters for total motility, progressive motility, Angular Path Velocity (VAP), Straight Line Velocity (VSL) and Curvy Linear Velocity (VCL) were significantly reduced ($p \leq 0.05$) after two hours of incubation in pure Mancozeb when compare to the control. In both pure and commercial Mancozeb treated samples, Amplitude of Lateral Head Displacement (ALH) of sperms was significantly lower ($p \leq 0.05$) after two hours of incubation with Mancozeb. APA of sperms of both pure and commercial Mancozeb treated samples was significantly reduced ($p \leq 0.05$) after two hours of incubation. Acrosome integrity test revealed that Acrosome Intact Live (AIL) sperms percentage was significantly less in treated groups whereas Acrosome Intact Dead (AID) and Acrosome Lost Dead (ALD) sperm percentages in the treated groups were significantly higher compared to the non-treated control ($p \leq 0.05$).

In conclusion short-term direct exposure to Mancozeb can significantly affect bovine spermatozoa functions. Furthermore significant effects can be seen on acrosome functions and integrity rather than the motility of the spermatozoa.

Financial assistance given by the International Foundation for Science, Sweden (B/5367-1) and National Research Council of Sri Lanka (NRC-13-059) is acknowledged.