



Journal of Environmental Science and Health, Part A >
Toxic/Hazardous Substances and Environmental Engineering

Volume 38, 2003 - [Issue 11](#)

189 | 25 | 0
Views | CrossRef citations to date | Altmetric

Original Articles

Concentration of Copper, Iron, Zinc, Cadmium, Lead, and Nickel in Boar Semen and Relation to the Spermatozoa Quality

Peter Massányi, Jozef Trandžík, Pavol Nad, Beáta Koréneková, Magdaléna Skalická,
Robert Toman , [... show all](#)

Pages 2643-2651 | Received 28 Jan 2003, Published online: 06 Feb 2007

[Cite this article](#) <https://doi.org/10.1081/ESE-120024453>



[Full Article](#)

[Figures & data](#)

[References](#)

[Citations](#)

[Metrics](#)

[Reprints & Permissions](#)

[Read this article](#)

[Share](#)

Abstract

The concentration of copper, iron, zinc, cadmium, lead, and nickel as well as its relation to spermatozoa quality was investigated. The semen samples were analyzed by atomic absorption spectrophotometry (AAS). The concentration of copper in boar semen was $1.64 \pm 0.28 \text{ mg kg}^{-1}$ and of iron $16.14 \pm 10.35 \text{ mg kg}^{-1}$. The concentration of zinc in boar semen reached an average value of $171.74 \pm 64.72 \text{ mg kg}^{-1}$ and the level of cadmium reached $0.01-0.16 \text{ mg kg}^{-1}$ with the average value of 0.05 mg kg^{-1} . The analysis of lead showed that the concentration of this element in boar semen was $0.02 \pm 0.03 \text{ mg kg}^{-1}$ and the average level of nickel was $0.06 \pm 0.08 \text{ mg kg}^{-1}$. The total percentage of pathological spermatozoa was $9.82 \pm 1.47\%$. Detail analysis

determined 3.18% of separated flagellum, 2.26% knob twisted flagellum, 0.88% flagellum torso, 0.85% flagellum ball, 0.42% broken flagellum, 0.23% retention of the cytoplasmic drop, 0.14% small heads, 0.03% large heads, and 1.83% forms other of pathological changes. Correlation analysis showed significant ($p<0.05$) positive correlation between copper and lead ($r = 0.52$). High correlation between small head and knob twisted tail ($r = 0.67$), small head and broken flagellum ($r = 0.88$) as well as between small head and total number of pathological spermatozoa ($r = 0.73$) was determined.

Keywords:

Copper Iron Zinc Cadmium Lead Nickel Spermatozoa Boar

Acknowledgments

We would like to express our gratitude to Ing. P. Cupka and Ing. O. Messinger for statistical analysis, Mrs. P. Sýkorová and Mrs. A. Sobčáková for technical assistance. This was supported by VEGA Scientific Grant 1/9080/02 from the Ministry of Education of Slovak Republic.

Related research

People also read

Recommended articles

Cited by
25

Information for

Authors

R&D professionals

Editors

Librarians

Societies

Opportunities

Reprints and e-prints

Advertising solutions

Accelerated publication

Corporate access solutions

Open access

Overview

Open journals

Open Select

Dove Medical Press

F1000Research

Help and information

Help and contact

Newsroom

All journals

Books

Keep up to date

Register to receive personalised research and resources
by email

 Sign me up

  

  

Copyright © 2026 Informa UK Limited Privacy policy Cookies Terms & conditions

Accessibility

 Taylor and Francis Group

Registered in England & Wales No. 01072954
5 Howick Place | London | SW1P 1WG