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

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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 ± 0.28 mg kg^{-1} and of iron 16.14 ± 10.35 mg kg^{-1}. The concentration of zinc in boar semen reached an average value of 171.74 ± 64.72 mg kg^{-1} and the level of cadmium reached 0.01–0.16 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 ± 0.03 mg kg^{-1} and the average level of nickel was 0.06 ± 0.08 mg kg^{-1}. The total percentage of pathological spermatozoa was 9.82 ± 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

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