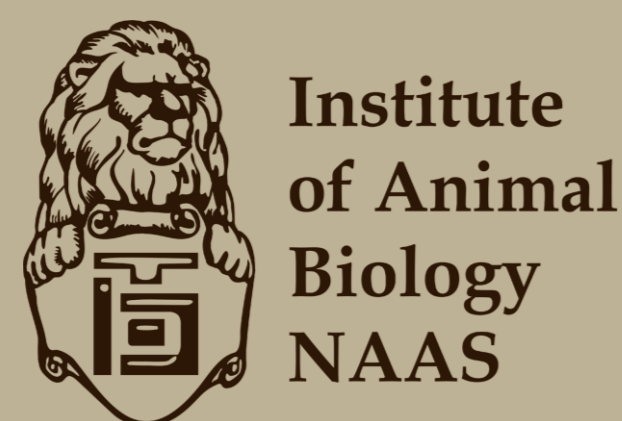


Spermatozoa quality after addition of nanocitrates of microelements to thawed raw semen.



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Introduction

At the process of preparation of ejaculates for cryopreservation there are changed the natural content of microelements that disrupt the course of substrate transformation and ATP resynthesize.

One of the ways that can eliminate the disadvantages of the micronutrient salts usage for ejaculate diluents and ensuring their inclusion in the metabolic processes in sperm are organic forms of metals, in particular the nanocitrate.

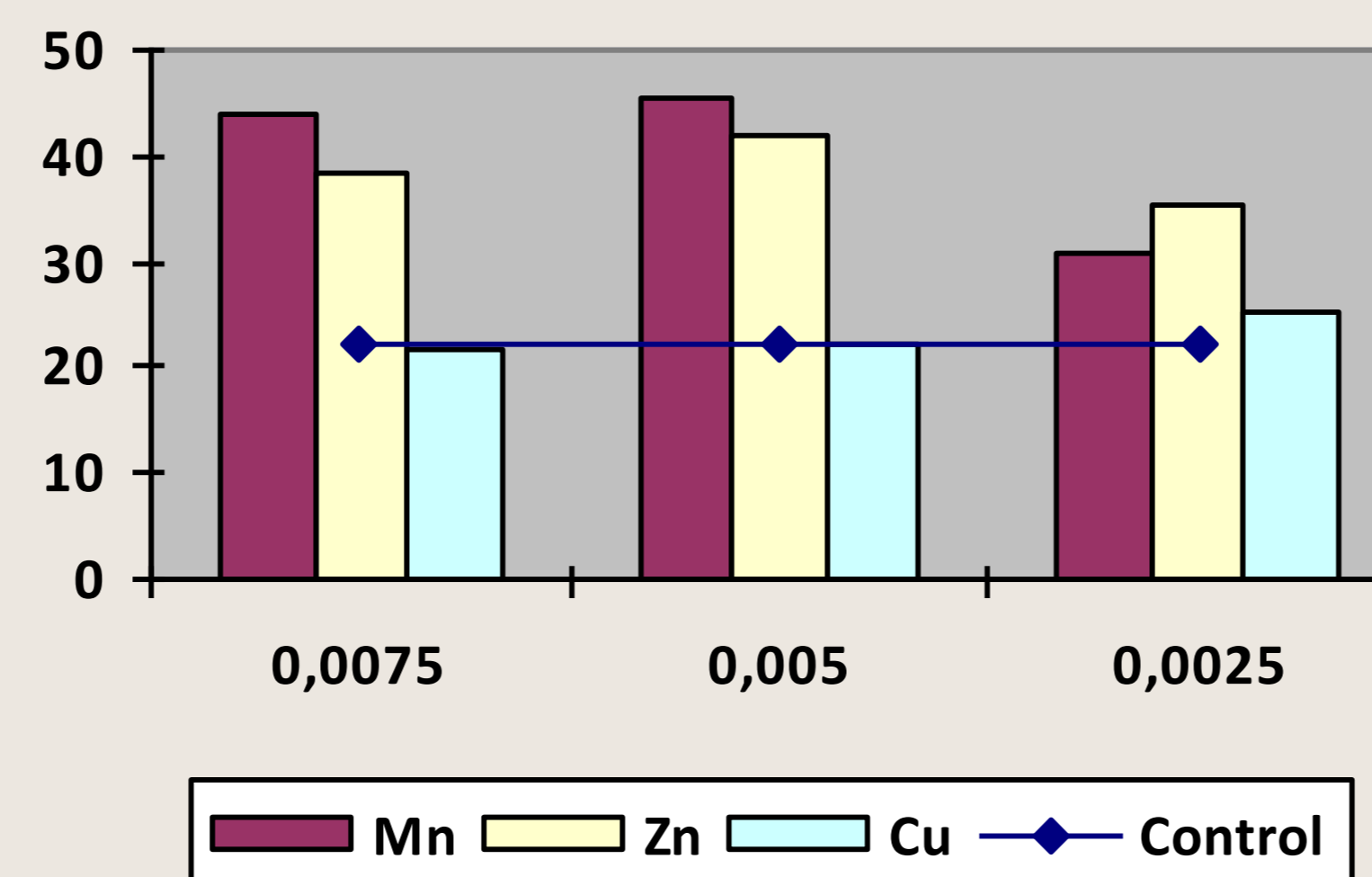
Material & Methods

Sperm from 6 rams of the Texel breed was taken on an artificial vagina, determined the activity and concentration of sperm, diluted with lactose-yolk-TRIS-citrate-glycerol medium. In the process of preparation of ram sperm for cryopreservation in the experimental groups nanocitrates of microelements were added to the diluents in the following doses: Zn and Mn - 0.0025, 0.005, 0.0075 $\mu\text{g/ml}$, and Cu - 0.00125, 0.0025, 0.00375 $\mu\text{g/ml}$. After thawing of sperm, the activity, survival, respiratory activity of sperm, activity of succinate dehydrogenase (SDH) and cytochrome oxidase (CO) were determined.

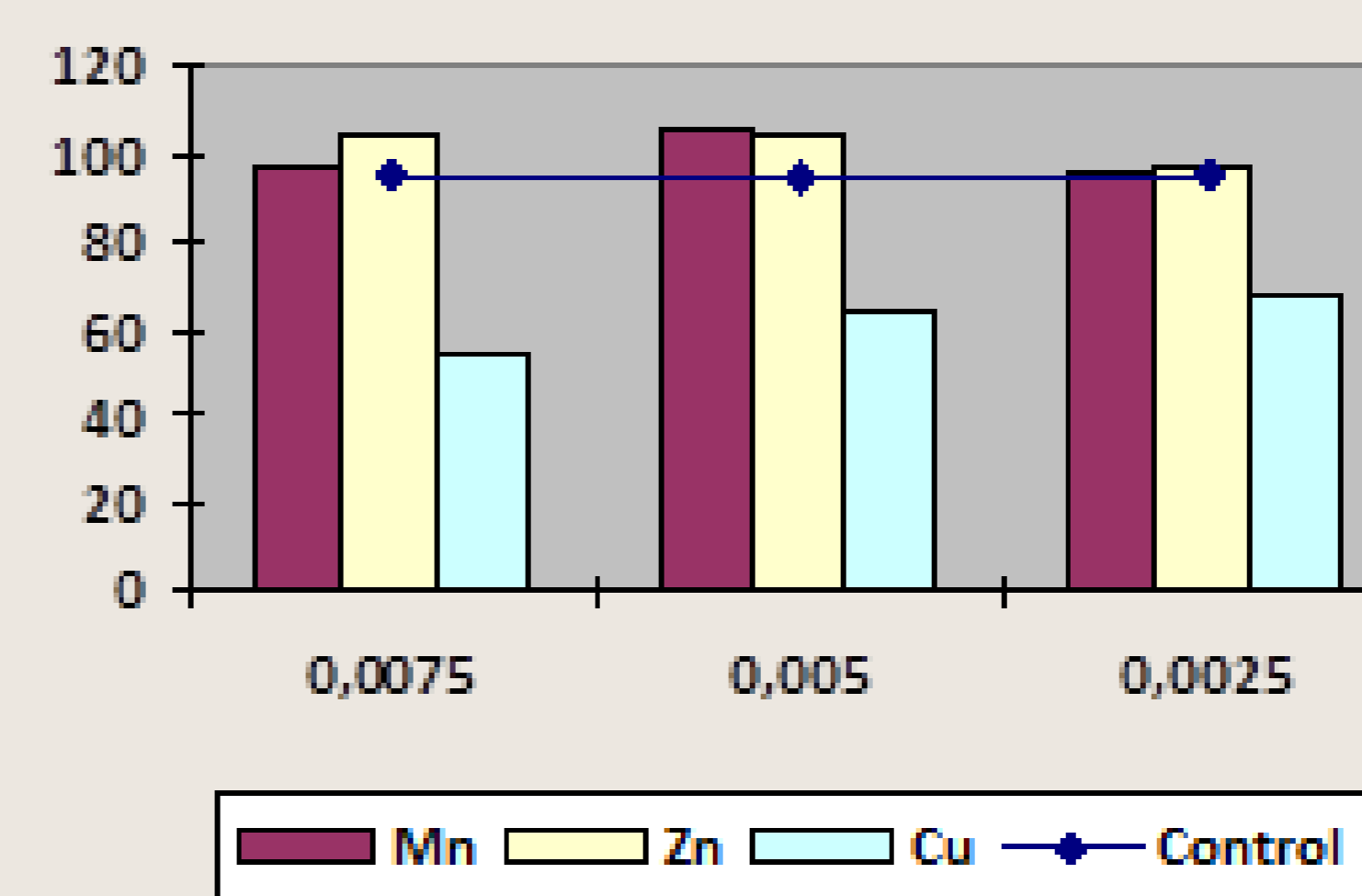
Results

After adding increasing doses of Zn-nanocitrates sperm respiratory activity was lower on 44.8 – 88.1 % ($p < 0.01 - 0.001$), comparing to control. When adding 0.00125 $\mu\text{g/ml}$ of Cu-nanocitrate respiratory activity was on control level, when adding 0.0025 and 0.00375 $\mu\text{g/ml}$ it was lower on 85.1 % ($p < 0.001$). The growth of content Mn-nanocitrates in diluted sperm is 2 and 3 times reduces by 28.4 – 40.3 % the respiratory activity of sperm. The addition of nanocitrate Cu does not alter the activity of SDH and CO in thawed ram semen. At the same time addition of increasing doses of Mn and Zn-nanocitrates stimulates the activity of SDH of ram spermatozoa: activity of enzyme was higher on 37.2-99,8 % ($p < 0,01$), comparing to control group. against the background of a slight increase in activity CO. Survival of spermatozoa after addition of Zn and Mn-nanocitrates in high doses had a tendency to increase, and but after adding of Cu-nanocitrate it decreased ($p < 0.05 - 0.001$)

The activity of SDH of ram spermatozoa, units



Survival of ram spermatozoa, hours



Conclusions

Optimal doses of Mn and Zn nanocitrates (0.005 $\mu\text{g/ml}$) have been established, which improve the quality of thawed ram semen. The addition of nanocitrates Cu in various doses reduces the quality of thawed ram sperm.