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THE EFFECT OF NANOAQUACITRATES OF TRANSITION METALS ON EMBRYONIC DEVELOPMENT OF DANIO RERIO

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Embryotest became a very popular in Western Europe and North America. Analysis of changes in the early stages of development allows tracing and predicting changes that may occur at the adult level. In addition, experiments on adult individuals are banned in many countries, so embryotest is one of the alternatives.

Compounds are obtained by erosion- explosive nanotechnology, gained a large spread in Ukraine. It has been proved that they have the unique property - penetration through the skin, stomach, placenta, blood-entsefality threshold. Therefore, toxicity and safety of their widespread use are poorly understood.

The aim of our research – to assess the degree of toxicity of nanoaquacitrates for *D. rerio* embryos and analyze the safety of their practical use.

A breeding stock of non-treated, mature zebrafish is used for egg production.

Females and males are kept at a ratio of 1:2 in a glass aquarium filled with charcoal filtered tap water with an oxygen saturation of more than 80%. Theulture conditions are 26 ± 1°C at a 12 hour day/night light regime. Optimal filtering rates should be adjusted using a filter system. The fish are fed with dry flakes twice per day, and ad libitum with nauplia larvae of Artemia spec. once a day. To ensure optimal water quality remaining food should be removed daily. Embryos are obtained by the standard method.

According to a study, the most survival of embryos were observed in control where the lethal effect does not exceed 10%, which is within the normal distribution. The percentage of embryo mortality in other variants grew with increasing concentration of nanoaquacitrates and time of exposure.

This phenomenon was observed by researchers in experiments with ionic forms of transition metals and hydrobionts from different trophic levels.

The death of embryos often recorded in the time interval from 24 to 48 hours explosure. At the same time, analyzing the results, it should be noted that the lethal effect of variations with nanoaquacitrates of different metals were almost identical. In all groups of embryos were alive about 80-90% of individuals after 72 hours exposure.

According to the research, a nanoaquacitrates may be arranged in the following descending order of their toxicity to embryos *D. rerio*: silver> iron> zinc.

Thus, nanoaquacitrates of transition metal have insignificant toxic effect on embryogenesis of *D. rerio*.

Approximately 10-15% of embryos had deviations from normal development. The percentage of individuals, who had a sublethal effect, is quite low, that indicating the possibility of practical application of nanoaquacitrates.