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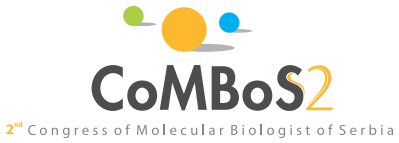

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Content

E-CIGARETTE LIQUID AND CONDENSATE LEADS TO IMPAIRED EMBRYONIC DEVELOPMENT OF ZEBRAFISH

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Introduction: E-cigarettes are advertised as safer alternative to tradicional cigarettes. However, they contain chemicals that can exhibit toxic effects on the organism. Notably, effects of e-cigarettes on *in utero* development are not well studied. We wanted to compare potential toxic effects of e-cigarette liquid and vapor condensate on development of zebrafish embryos.
Methods: Six hour old zebrafish embryos were exposed to different concentrations of e-cigarette liquid or vapour condensate – 0.1% and 1%. Untreated embryos were used as control. Each treatment and control were set up in triplicate, with at least 20 embryos per treatment. The effects on survival, hatching and developmental malformations were monitored using light microscopy, at 3 timepoints - 24, 48 and 72 hours post fertilization (hpf).
Results: No noticeable differences between control and treated groups were observed 24 hpf. Hatched larvae (35%) treated with 0.1% condensate had scoliosis and malformations- yolk sac and pericardial edema at 48 hpf. In groups treated with 1% of condensate or liquid, hatching was delayed and did not start 48 hpf. At 72 hpf timepoint, in wells with 1% condensate, less than 30% of larvae hatched in total, which was comparable to wells with e-cigarette liquid (25%). Malformations that were observed in all treatements are hemagglutionation, pericardial or yolk sac edema, and scoliosis. In groups with 0.1% condensate these maformations were observed in lower number of embryos, but the percentage of hatched larvae was higher (approximately 80%) at 72 hpf.
Conclusions: Chronic exposure to e-cigarette vapor condensate and liquid leads to severe disorders of zebrafish embryonic development.

Key words: e-cigarettes; toxicology; developmental malformations; zebrafish

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