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ECO-TOXICOLOGICAL AND BACTERICIDAL EFFECTIVENESS EVALUATION BIOASSAY OF SOME COMMERCIAL DISINFECTANTS IN AQUACULTURE

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Disinfectants are vital tools for effective fish farm biosecurity; however, eco-toxicological data about chemotherapeutic use in aquaculture are not available or difficult to be obtained. *In vivo* evaluation study was necessary for establishing whether a previous *in vitro* bactericidal effectiveness evaluation of selected six commercial disinfectants was assessed by the proposed CEN 1276 Phase2 step1 test that was followed, beside investigation the safety application of the tested disinfectants into an aquatic system. In a three sequential studies, the evaluation bioassay of six commercial disinfectants, Virkon-S®, Biosentry® Iodine™, Biosentry® 904™, Aldekol des- Gda®, TH4® and Peraclean®, was conducted at No Observed Effect Concentration (NOEC) after acute and chronic disinfectant toxicity testing following OECD (guideline no.203) challenged against three common bacterial genera causing disease problems in aquatic ecosystem, *Aeromonas hydrophila* (gyr-B LC012344), *Pseudomonas aeruginosa and Vibrio alginolyticus,* at median infective dose (ID_{50}) obtained from infectivity test. Efficient bactericidal effectiveness was confirmed by Virkon-S®, Aldekol des- Gda® and Peraclean® at NOEC against the challenged bacterial strains, on the other hand TH4® disinfectant failed to achieve the bactericidal effect, inspite of its proven efficient bactericidal reduction under *in vitro* conditions against all challenged bacterial strains in a previous study, meanwhile, eco-toxicological data classified biosentry® 904™ as classI, acute toxic disinfectant, while Virkon- S®, Aldekol des- Gda®, TH4® and peraclean® as class III, slightly toxic chemicals as LC_{50} / 96 hours values were 100, 50, 35, 100 ppm, respectively. So, Virkon-S®, Aldekol des-Gda® and Peraclean® were of wide safety margin and can be used for disease control in aquaculture achieving efficient bactericidal effectiveness in contrary to TH4 that failed to achieve *in vivo* bactericidal effectiveness therefore, the standardized steps for testing disinfectants under both *in vitro* and *in vivo* should be followed to achieve complete evaluation data.

***Key words*:** Disinfectant testing- *in vitro- in vivo* Evaluation- Acute and chronic Fish Toxicity Testing- OECD 203 test- LC_{50}- NOEC).