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Influence of exposure to magnetic field on water properties and hatchability of *Artemia salina*

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This study is based on earlier works which discussed the effects of magnetic field exposure on the properties of water. Magnetic water is produced when water is passed through a magnetic field with the purpose of modifying its structure. The magnetic field can cause a hierarchy of changes ranging from the dynamics of electrosolitons to the state of macromolecules of water. The changes in physical and chemical properties of magnetized water affect the biological properties of the organism that consumes the magnetic water such as the organism's rate of respiration, which in turn affects its entire metabolic system. Literature have already shown that exposure of water to a magnetic field has positive effects on its properties and that it makes it better for plant irrigation, livestock water-drinking , and for metabolism too. However, the application of magnetized water in aquaculture is still in its infancy. This study is a step towards gaining a better understanding of the effect of magnetism on water properties and the biology of culture organisms, such as the brine shrimp, *A. Salina*. The present study evaluates the effects of magnetic field exposure on water properties which in turn affect the hatchability of *A. Salina*. Magnetic field strengths of 0.1, 0.15 and 0.2 Tesla were applied to water for different time periods of 5 hr, 10 hr, 15 hr, and 20 hr. The dissolved oxygen (DO mg/l) was found to increase by a maximum of 8 %. pH also increased by 4.18% which is favorable for the *A. Salina*. The ammonium (NH4-N mg/L) and ammonia (NH3-N mg/L) levels were found to have decreased by 36.71 and 22.6 % respectively. Salinity (ppt), specific conductance (µS/cm) and total dissolved solids (mg/L) were also found to have increased after magnetization. Overall, the exposure of water to a magnetic field was found to have significantly ($P \leq 0.05$) increased the hatchability rate of *A. Salina*. A much better increase of 39.61 % in *A. Salina* hatchability rate (H%) was attained in water exposed to a magnetic field of 0.15 Tesla for 20 hours. This has positive implications for aquaculture because a higher *A. Salina* hatchability may mean that the brine shrimp can be bred at a both cheaper and higher rate, which in turn promises of a rapid growth of this industry.

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Seafood inspection process by The United States Food and Drug Administration

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As the aquaculture industry continues to expand, concerns regarding the use of unapproved animal drugs and unsafe chemicals, and the misuse of animal drugs during aquaculture production has increased substantially. Aquaculture producers, particularly in developing countries, may use pesticides, general purpose chemicals or unapproved antibiotics that may cause food safety risks or harmful health risks to humans. Furthermore, use of antibiotics, such as nitrofurans and chloramphenicol, in animals can contribute to the emergence and spread of antimicrobial resistance in bacteria that may be transferred to and cause infections in humans, and reducing the effectiveness of these antimicrobial drugs vital for treatment of human disease. Ensuring the safety of the food supply continues to be a top priority for the United States Food and Drug Administration (FDA). To determine compliance with FDA laws and regulations, the FDA conducts import field examinations and sample collections of food products before the products may enter the United States. The goal of the foreign inspection program is to help ensure that foods exported to the United States are safe and meet FDA regulatory requirements. In addition to supplementing border surveillance and sampling, the program is intended to promote the development of cooperative relationships with foreign regulatory authorities and assist in building confidence in their seafood regulatory programs.

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