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**TINIDAZOL ANTIBIOTIC DEGRADATION IN AQUEOUS  
SOLUTION BY ZERO VALENT IRON NANOPARTICLES  
AND HYDROGEN PEROXIDE IN THE PRESENCE OF  
ULTRASOUND RADIATION**

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*The purpose of this study was to investigate the efficiency removal of the antibiotic Tinidazol by hybrid system of ultrasonic/nZVI/H<sub>2</sub>O<sub>2</sub> (US/nZVI/H<sub>2</sub>O<sub>2</sub>) in aquatic environment. It examined the effect of variables such as concentration of antibiotic, nZVI and H<sub>2</sub>O<sub>2</sub>, frequency of US and pH. Also the performance of system in removal of COD and electrical energy consumed by the ultrasonic bath was investigated. Findings showed the best efficiency (93 %) for system in pH 3, concentration hydrogen peroxide of 1M, amount of 0,2 g of zero valent iron nanoparticles and 130 kHz radiation frequency. According to the results US/nZVI/H<sub>2</sub>O<sub>2</sub> method can be good performance in removal of antibiotics Tinidazol and similar pollutants.*

**Keywords:** tinidazol antibiotic, zero valent iron nanoparticles, hydrogen peroxide, ultrasound radiation

## **1. Introduction**

Antibiotics are dangerous pollutants in the aquatic environment due to its undesirable effects on aquatic live and humans. The problem may occur Due to presence of low concentrations of antibiotics in the environment, is developing of antibiotic resistant bacteria [1]. With increasing use of antibiotics in the world, the quality of drinking water for humans is significantly reduced. The majority of these contaminants have low biodegradability [2] and high toxicity [3], showing mutagenic and carcinogenic characteristics [4]. Tinidazol, a broad-spectrum antibiotic, is highly effective against gram-positive and gram-negative anaerobic pathogens as well as gram-positive aerobes and effectively used for the treatment of serious respiratory tract infections, serious skin and soft tissue infections, etc [5]. Different methods are used for wastewater treatment

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