

## عنوان مقاله:

Gold nanoparticles: An offer to control of vancomycin-resistant enterococci in wastewater

## محل انتشار:

مجله پیشرفت در تحقیقات بهداشت محیط, دوره 8, شماره 3 (سال: 1399)

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## خلاصه مقاله:

Industrial wastewater is one of the most dangerous and important sources of bacterial pathogens. This study aimed to determine the frequency of vancomycin-resistant enterococci (VRE) in samples taken from wastewater plants of Golestan Province, Iran, and evaluate the antimicrobial effect of gold nanoparticles (AuNPs) in combination with vancomycin on the growth of isolates resistant to vancomycin. Samples were taken from three plants in Gorgan, Kordkuy and Bandar Turkoman. Enterococcal species were identified based on the most probable number (MPN), filtration, microbiological and biochemical tests. Susceptibility to six antibiotics with monitoring of vancomycin was investigated using the Kirby-Bauer method, according to the CLSI-2015 guidelines. The antibacterial effect of AuNPs was evaluated using agar well diffusion method. More than 60% of wastewater samples were positive for enterococcal species, 65% of which were found in raw effluent, while the remaining 35% were found in the treated effluent. Based on the results, 88.2% of the isolates were resistant to ampicillin. The frequency of vancomycin-resistant enterococci was 47.1%. Our findings indicate the presence of multi-drug resistant enterococci and high rate of vancomycin resistance in wastewater samples from the Golestan Province, Iran. Results show good antibacterial effects of AuNPs in combination with vancomycin in high densities against all the drug-resistant enterococci strains.

## کلمات کلیدی:

Enterococci, Wastewater, Gold Nanoparticles, Vancomycin

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1168925>

