

عنوان مقاله:

Efficiency evaluation of hydrogen sulfide-producing bacteria as an indicator in the assessment of microbial quality of water sources

محل انتشار:

هفتمین همایش ملی و نمایشگاه تخصصی مهندسی محیط زیست (سال: 1393)

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خلاصه مقاله:

Hydrogen sulfide-producing bacteria constitute an alternative approach for the monitoring of microbial quality of water samples. The goal of this study was to assess the usefulness of the H₂S test for detection of fecal pollution of water in comparison to fecal indicator bacteria (FIB). A total of 70 raw water samples were collected from drinking water sources in Isfahan province of Iran, aseptically in sterile containers during May–October 2012. The modified H₂S test medium of Manja et al. was used except that L-cysteine was added as an additional medium component. Total coliforms (TCs), fecal coliforms (FCs), and fecal streptococci (FS) were also estimated by multiple-tube fermentation method. Statistical analyses were carried out using SPSS 20 at the 95% confidence level ($\alpha = 0.05$). It was found that out of 70 water samples assessed, 48.3%, 30.0%, 34.6%, and 32.9% of the samples were positive for TCs, FCs, FS, and H₂S, respectively. Analysis of data showed that 95.6%, 69.5%, and 76.9% of water samples, which were positive for H₂S test were also positive for TCs, FCs, and FS, respectively. The H₂S test was found to have the highest accuracy for the detection of FS, but it was not a suitable indicator for the prediction of FCs. Our results showed that H₂S test is not a suitable alternative approach for routine water quality monitoring. However, the H₂S test could be used as an easy and economic test to assess the quality of drinking water in communities where manpower and sophisticated equipment are inadequate. More laboratory and field studies are required to assess the reliability of the method as an alternative method of traditional indicators

کلمات کلیدی:

Fecal indicator bacteria, H₂S test, microbial quality, water sources

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