Isolation and identification of pathogenic free-living amoeba from surface and tap water of Shiraz City using morphological and molecular methods.

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Abstract

Free-living amoebae (FLA) are the most abundant and widely distributed protozoa in the environment. An investigation was conducted to determine the presence of free-living amoebae (FLA), Acanthamoeba and Vermamoeba in waterfronts of parks and squares and tap water of Shiraz City, Iran. FLA are considered pathogenic for human. These ubiquitous organisms have been isolated from different environments such as water, soil, and air. Eighty-two water samples were collected from different places of Shiraz City during the summer of 2013. All samples were processed in Dept. of Parasitology and Mycology, Shiraz University of Medical Sciences, Fars, Iran. Samples were screened for FLA and identified by morphological characters in the cultures, PCR amplification targeting specific genes for each genus and sequencing determined frequent species and genotypes base on NCBI database. Overall, 48 samples were positive for Acanthamoeba and Vermamoeba in non-nutrient agar culture based on morphological characteristics. The PCR examination was done successfully. Sequencing results were revealed T4 (62.96 %) genotypes as the most common genotype of Acanthamoeba in the Shiraz water sources. In addition, T5 (33.33 %) and T15 (3.71 %) were isolated from water supplies. Vermamoeba vermiformis was known the dominant species from this genus. The high frequency of Acanthamoeba spp. and Vermamoeba in different environmental water sources of Shiraz is an alert for the public health related to water sources. The result highlights a need for taking more attention to water supplies in order to prevent illnesses related to free-living amoebae.

KEYWORDS:

Acanthamoeba spp.; Free-living amoebae; Hartmannella spp.; Iran