Prevalence of intestinal parasites in vegetables consumed in Ardabil, Iran

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Abstract

Fresh vegetables are an important part of a healthy diet. In recent years there has been an increase in the number of reported cases of food-borne illness linked to fresh vegetables. The consumption of raw vegetables is a major way in the transmission of parasitic contaminations. The goal of this study was to determine the parasitological contamination of vegetables sold at markets and obtained from gardens. A total of 141 samples from different vegetables were randomly selected from the markets and gardens (markets: 96; gardens: 45) and then were examined by a concentration method. Each sample was washed with water, allowing sedimentation at room temperature for 24 h. Five ml of sediment were centrifuged at 3000 rpm for 5 min. Sediment was examined in lugol stained slides through light microscopy. Fifty percent (48/96) of markets vegetables and 71% (32/45) of gardens vegetables were contaminated with different parasites. Prevalences of pathogenic parasites in vegetables of markets and gardens were 25% and 29%, respectively. Parasites detected were Giardia cysts (7%), Dicrocoelium eggs (6%), Fasciola eggs (5%) and Ascaris eggs (2%). In regard to results of this study, the importance of vegetables in the transmission of intestinal parasites in stressed, and it is necessary to improve the sanitary conditions of these kinds of food.

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1. Introduction

The increased demand, global sourcing and transport of foods, especially salad vegetables, enhance both the likelihood of surface contamination and survival of the transmissive stages of parasites pathogenic to man. Food normally becomes a potential source of human infection by contamination, during production, collection, transport and preparation or during processing, and the sources of zoonotic contamination are usually faeces, faecally-contaminated soil or water (Slifko, Smith, & Rose, 2000). Intestinal parasites are widely prevalent in developing countries, probably due to poor sanitation and inadequate personal hygiene (Kang et al., 1998). It is estimated that as much as 60% of the world’s population is infected with gut parasites (pathogen and nonpathogen), which may be transmitted through direct and indirect contact, food, water, soil, vertebrate and arthropod vectors and, rarely from mother to offspring (Brown & Neva, 1987; Kang et al., 1998).

The consumption of properly washed vegetables is a major way for transmission of parasitic contaminations (e.g., Fasciola). Several surveys in different parts of the world show that the vegetables can be agent of transmission of protozoa cysts and oocysts (Giardia, Entamoeba, Toxoplasma and Isospora) and helminths eggs and larvae (Hymenolepis, Taenia, Fasciola, whipworm, Trichostrongylus, Strongyloides and Hookworms) (Choi, 1972; Choi, Ock, & Suh, 1982; Coelho, Oliveira, Milman, Karasawa, & Santos, 2001; Erdogru & Sener, 2005). This problem is becoming an increasing concern because of the expanding number of susceptible people (i.e., the elderly and the immunocom-