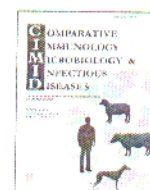




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Review

Public health significance of *Helicobacter pullorum*, a putative food-associated emerging zoonotic pathogen in Iran

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ABSTRACT

According to the World Health Organization, diseases which are naturally transmissible from vertebrate animals to human beings or from humans to vertebrates are defined as the zoonotic diseases. Among the most common zoonotic pathogens, *Helicobacter pullorum* has earned public recognition regarding its public health significance. This Enterohepatic *Helicobacter* species has been shown to be a very dangerous and life-threatening microorganism, accounting for several clinically important infections in the human population. However, despite the several studies indicating the significance of *H. pullorum* in both humans and animals, there is a lack of documented information and reliable statistics about this pathogen throughout the world. Thus, in this review, we would provide a novel knowledge about the general characteristics, isolation methods, host ranges and transmission routes, and occurrences of *H. pullorum* in poultry, chicken meat, and human in Iran. We would also clarify the status of antimicrobial resistance (AMR) profile of the *H. pullorum* isolates from various samples in this country.

1. Introduction

It is worth highlighting that the consumption of poultry meat, especially chicken meat is estimated to rise in Asia [1,2]. Actually, foods of animal origin can be regarded as the main reservoirs for the dissemination of the food-borne pathogens, which this issue can consequently lead to causing the diarrheal diseases in both adults as well as children [3,4]. According to the World Health Organization (WHO), diseases which are naturally transmissible from vertebrate animals to human beings or from humans to vertebrates are defined as the zoonotic diseases [5]. There have been numerous food-borne zoonotic bacterial pathogens triggering diarrheal diseases, namely *Salmonella* spp. (*Salmonella enterica* serovar Enteritidis), *Campylobacter* spp., and Shiga toxin-producing *Escherichia coli* (STEC) [4,6]. It is therefore reasonable to state that the food-associated diseases must be taken into account as a great public health concern and a major human health hazard, particularly in the developing countries [7,8].

It is well-established that the genus *Helicobacter* is extremely significant in terms of frequency, public health, food safety, and seriousness of disease [9,10]. This genus is broadly categorized into two main subgroups, including Gastric (GH) and Enterohepatic *Helicobacter*

(EHH) species, based on the phylogenetic analysis and ecological niches [11–13]. Thus far, it is estimated that the *Helicobacter* genus comprises of nearly 47 species [13]. *Helicobacter pylori* (*H. pylori*), as one of the most well-studied GH species, is a common inhabitant of the mucus layer of the animals and humans [14]. Given that *H. pylori* plays important roles in causing the several disorders, such as peptic ulcer disease, gastric cancer, and chronic-active gastritis, this bacterium has received priority attention throughout the world [15–17]. More importantly, due to the proven fact that approximately 50% of the world populations are shown to have this pathogen in their upper gastrointestinal tracts, the WHO has classified this organism as a Class I definite carcinogenic [18]. However, *Helicobacter pullorum* (*H. pullorum*), which is included in the latter subgroup, has earned a considerable public recognition regarding its public health significance [19,20].

H. pullorum appears to be a putative food-associated emerging zoonotic pathogen, which was initially uncovered by Stanley et al. in the 1994 [21,22]. It has long been known that the caeca, and to a lesser extend the liver and other intestinal contents are considered as the suitable places for the growth of this bacterium [23–25]. This prominent enteric pathogen has been cultivated from the various sources, namely the caeca of the asymptomatic poultry, the livers and intestinal contents

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