CASE REPORT

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Salmonella Rubislaw Statement from the Environmental Isolate of a Poultry Facility

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Abstract
Salmonella is gram negative, facultative anaerobe and zoonotic bacterium and their serotyping based on the Kauffmann-White schema according to these three different antigens including somatic (O) and flagellar (H) antigens. Among these serotypes, *S. enterica* subsp. *enterica* (I) is the most important factor responsible for Salmonella infections. It has been reported in several publications that Salmonella infections caused by *Salmonella* Rubislaw have started to be seen in recent years with the increase of exotic animal breeding for hobby purposes. In the serotyping of Salmonella spp. positive environmental isolate sample, which was sent from a poultry establishment to the Bacteriological Diagnostic Laboratory of the Central Research Institute of Veterinary Control on 20.10.2019, *Salmonella enterica* serotype Rubislaw was identified. This isolate is the first specimen in which *S.* Rubislaw was identified. It is highly probable that similar cases in which exotic animals play an important role in transmission are more common in our country in the near future.

Keywords: Poultry farm, *Salmonella* Rubislaw, identification.

INTRODUCTION

Salmonella species are considered as among the most important pathogens for animals and humans. They are non-spore, gram negative, facultative anaerobic bacteria and they are divided into two types as *S. bongori* and *S. enterica* according to the latest classification. Although *S. bongori* infections are rarely observed, 7 *S. enterica* which has 7 subtypes (*Salmonella enterica* subsp. *enterica*, *Salmonella enterica* subsp. *salamae*, *Salmonella enterica* subsp. *arizonae*, *Salmonella enterica* subsp. *diarizonae*, *Salmonella enterica* subsp. *houtenae*, *Salmonella enterica* subsp. *bongori* and

Salmonella enterica subsp. *indica*) infections are frequently encountered. Many Salmonellae isolated from mammals and poultry have been identified as *S. enterica* subsp. *enterica* (I) (Aydın and Paracıkoğlu, 2006; Foley et al., 2013; Günaydın et al. 2017).

Salmonella isolates are serotyped using the Kauffmann White scheme according to having somatic (O) and flagella (H) antigens. Using the slide or tube agglutination method with Salmonella antiserum, first, the microorganism is identified as its serogroup by the "O" somatic antigen; then, the serotype is determined by the identification of "H" flagellar antigen (Aydın and Paracıkoğlu, 2006; Cilo et al. 2013).

MATERIALS AND METHODS

Salmonella spp. positive environmental isolate, which was sent to the Bacteriological Diagnosis Laboratory of the Central Research Institute of Veterinary Control from the poultry business on 20.10.2019, was subjected to slide agglutination according to somatic (O) and flagellar (H) antigens and serotyped according to Kauffmann-White scheme.

RESULTS

As a result of serotyping according to Kauffmann-White scheme, Salmonella isolate sent to the laboratory was identified as *Salmonella enterica* serotype Rubislaw (*S. Rubislaw*).

This agent has the general characteristics of Salmonella and its antigenic formula is "11: r: e, n, x.. In other words, somatic antigen was "11"; In flagellar antigens, Phase I was "r"; Phase II was "e, n, x" (Figure 1).

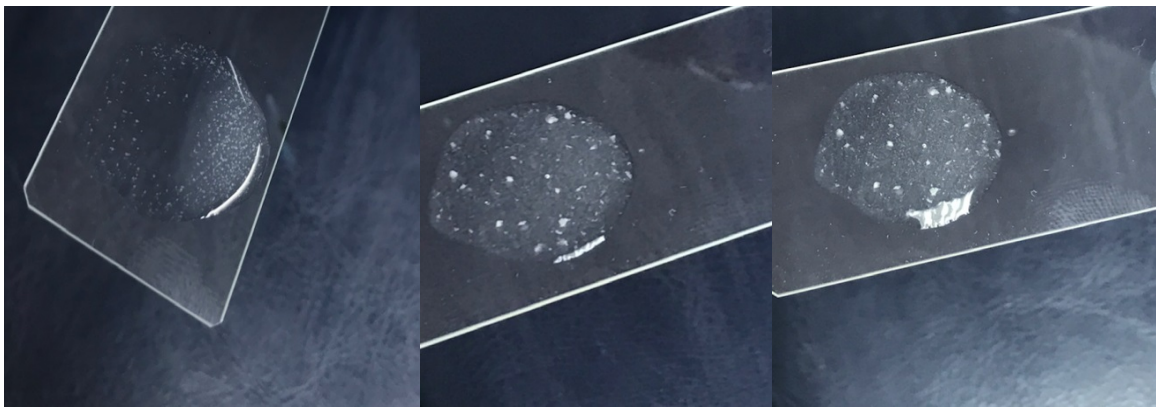

Figure 1. Positive reaction with somatic O antigen and positive reaction with Flagellar H antigens in phase 1 and 2.

DISCUSSION AND CONCLUSION

In recent years, with the increasing prevalence of exotic pet, the interaction of reptiles and humans has increased. Therefore, Salmonella agents not seen before have started to threaten public health. One of these factors, and perhaps most important, is *S. Rubislaw* (Cameron et al. 2010; Moffatt et al. 2010; Whiley et al. 2017). It has been reported that this salmonella species has been isolated in an 11-year-old child in the USA as a result of examinations on complaints of fever and joint pain (Tassinari et al. 2019), in a 3-month-old infant in the UK as a result of examinations on complaint of meningitis (Ward, 2000) and in a 4-monthold infant in Australia as a result of examinations on complaint of enteritis and diarrhea. When the epidemiology of these infections is investigated, it has been reported that exotic domestic animals play an important role in the transmission (Cameron et al. 2010). In the studies carried out on the subject, it has been reported that especially young children are more affected by infections and exotic animals play an important role in the transmission of infection in these children. Also, it has been reported that *S. Rubislaw* was isolated from the serotypes isolated from a Salmonella induced food poisoning in Germany in 1993 (Lehmacher et al. 1995), Salmonella serotypes isolated from water in a study conducted in rivers in the USA (Maurer et al. 2015; McEgan et al. 2014) and *Noctilio leporinus* (fish-eating bat) in Trinidad and Tobago (Adesiyun et al. 2009).

In the literature review; although there have been reported cases of *S. Rubislaw* sporadic infections worldwide; no case of *S. Rubislaw* has not been reported in our country. This study is the first report on isolation of *S. Rubislaw* from environmental isolates in Turkey.

As a result, in the spread of Salmonellosis agents and transmission sources, not only the sources related to food consumption, but also exotic animal transmission routes should be examined. This indicates that the interaction between humans, water and animals (including wild and exotic animals) is important in the epidemiology of Salmonella infections, which are common in nature.

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