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Title: Genomic detection of *Francisella* species in the blood and milk samples of sheep and goats in Urmia region

Summary:

The genus *Francisella* includes various species that can cause infectious diseases in animals as well as humans. Given that culturing the bacteria is difficult, costly, and requires level 3 laboratories, genomic diagnosis of *Francisella* species is one of the important strategies in identifying and treating the disease caused by it. In this regard, identifying and determining the species of this bacterium is of particular importance, as it can help control and prevent the spread of diseases. Using genomic diagnostic methods, such as PCR (polymerase chain reaction) and gene sequencing, allows for more accurate and rapid identification of *Francisella* species. These methods are capable of identifying latent infections and also help track the source of contamination. Polymerase chain reaction was performed using specific primers targeting the *Francisella* genus. Positive PCR products were sent to Pishgam Company for sequencing. Sequence data were analyzed and phylogenetic analysis was performed using the maximum likelihood method in MEGA V.11. These results are the first report in Iran for the identification of the *Francisella* genus. In the present study, the main objective was to investigate the presence of the *Francisella* genus. A total of 315 blood samples, 241 milk samples and 179 tick samples were collected from sheep and goats to investigate the presence of *Francisella* species. Nested PCR technique did not show the presence of *16S rRNA* gene of *Francisella* species in blood and milk samples in small ruminants. But the results of the examination of tick samples showed that out of 179 ticks, 30 samples were positive for the *Francisella* genus. This research can lead to improved animal health, increased livestock production, and also reduce the risk of disease transmission to humans. In addition, the information obtained can be used in developing effective control and health strategies in the Urmia region and other similar regions. This research seeks to improve the epidemiological knowledge of *Francisella* species. Understanding the risk of transmission of this pathogen between humans and animals is very important for public health, especially for people working in animal-related fields.

Key words: Urmia region, sheep, goat, milk, blood, *Francisella*