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COXIELLA BURNETII IN RAW MILK AND CHEESE IN IRAN

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Abstract: *Q fever is a zoonotic disease caused by the rickettsial organism Coxiella burnetii. Cattle, sheep and goats are the main sources of human infection. Infected animals shed highly stable bacteria in urine, faces, milk and through placental and birth fluids. Inhalation of aerosolized organisms or ingestion of raw milk or fresh dairy products has been reported in human and animals. This study was conducted to determine the prevalence rate of C. burnetii in raw cow milk, raw sheep milk, traditional cheese and ice cream produced in Isfahan and Shahrekord, Iran. A total of 200 samples including 50 cattle and sheep milk samples and 50 traditional cheese & ice cream were collected and tested for C. burnetii using a nested PCR assay. In*

total, 2 of 50 (4%) of analyzed cattle bulk milk samples were tested positive for C. burnetii. All 150 sheep milk, traditional cheese and ice cream samples collected were negative for C. burnetii. These results prove that cow's milk could be considered an important reservoir for C. burnetii infection in Iran.

Key words: *Coxiella burnetii, PCR, milk, ice cream, cheese, Iran.*

Introduction

Coxiella Burneti, Q fever zoonoses agent with intercellular obligation life, can infect lots of animals including sheep, cow and so forth. This bacterium localizes in uterus and mammary glands of livestock in chronic stage of disease .besides contaminated milk to Coxiella Burneti may cause to infection of people (Maurin and Raoult,1999; Parker et al,2006). Q fever is a subclinical disease in animals spreads through milk, urine and feces. It may live for a long time in environment thus it is believed that contains both germ and spore forms. Disease symptoms are abortion, Prematurity infants and Infertility (Zhang et al, 1998; Bildfell et al, 2000).

Materials and methods

200 samples of cow and sheep milk along with traditional cheese and ice cream randomly selected, placed in sterilized container and carried to Lab in the presence of dry ice. To trace Coxiella Burneti genomes Berri et a.(2003) methods used. Nested-PCR used to conduct investigation of Coxiella Burneti DNA. Selected Primers to reproduce coml gene which codes the production of outer membrane protein selected by Fretz et al.(2007). Optimized concentrations of components in 25 µl are 5 µl patterned DNA, 0.5mM MgCl₂, and 1µmol of each primer (OMP1-OMP2),0.5 unit taq DNA polymerase and 200 µM dNTP Mix. Thermo cycler model Mastercycler Gradient, Eppendorf, Germany used for thermal program. OMP3-OMP4 primers used for 2nd stage of PCR. Resultants separated by electrophoresis in 1.5 % agarose gels containing ethidium bromide and finally investigated by UV light.

Results

Results showed 2 positive infection samples (1%) to Coxiella Burneti among 50 row cow milk samples, none of the other samples observed this bacterium

Discussion

Consumption of milk and dairy products can play an important role in epidemiologic of Q fever (Hirai et al, 2005; Cerf and Condron,2006) .Serologic test displayed a 10.7 % of infection people who consumed raw milk. Similar reports found in England, Bulgaria, Slovakia and Spain

(Rahimi et al,2009). The incidence of Q fever in this research is in agreement with former study of the authors where they reported 6.2 % of incidence in cow milk samples of Shahrekord Province of Iran. In a similar study in Sweden, among 359 samples of a cheese production factory, 17samples (4.7%) infection to *Coxiella Burneti* (Guatteo et al, 2008). Kim et al. (2005) reported that 90% of this bacterium in storage tanks. Results revealed that no contamination of *Coxiella Burneti* in traditional ice cream and cheese as well as sheep milk samples, these results are in agreement with Fretz et al.(2007) and Rahimi et al.(2009) findings. However some serologic studies displayed a high incidence of this bacterium in Sheep (Reinthal et al, 1988). None of the ice cream and cheese samples showed the *Coxiella Burneti* in them as a result of initial heating in pasteurization process. One of the reasons of disorders occurring in *Coxiella Burneti* incidence attributes to the geographical location, the method of experiments (serologic and molecule experiments), the amount and type of samples and season. Rahimi et al.(2009) reported that 8 infection milk samples among 13 samples of collected sample in Shahrekord province of Iran were related to the end of winter and beginning of the spring, however no significant differences observed in the amount of incidence of contamination.

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