Comparison of Culture Methods and Multiplex PCR Technique for Detection of Brucella abortus & Brucella melitensis From Human Blood Samples

Reza Mirnejad*[1]; Vahab Piranfar[2]; Seied Mojtaba Mortazavi[3]; Mozafar Mohammadi[4]

1-Research Center of Molecular Biology, Baqiyatallah University of Medical Science, Tehran, Iran

2-Molecular Biology Research Center, Baqiyatallah University of Medical Sciences, Tehran. , Iran

3-Health Station, Kerman University of Medical Sciences, Kerman, Iran

4-Molecular Biology Research Center, Baqiyatallah University of Medical Sciences, Tehran., Iran

rmirnejadreza@yahoo.com

Background & Objectives: Traditional Methods for detection of Brucella species, Such as bacterial culture and serological tests is time-consuming, risky and requires expensive materials. Besides these Methods, the molecular techniques with high sensitivity and specificity can be identifying small amounts of microbial DNA in a volume of eukaryotic genetic material.The purpose of this study was to compare culture Methods with multiplex PCR technique for identification of *Brucella abortus* and *Brucella melitensis* from human blood.

Methods: In this study, 52 blood samples from patients suspected of Malta fever with high serum titers of 1/80 were studied. All samples were cultured in Brucella-specific media. Brucella species were identified by using biochemical tests. DNA extracted with phenol-chloroform DNA extraction Methods. IS711 was amplified simultaneously with using three specific primers and patterns obtained were analyzed.

Results: From 52 samples, 32.7% (17) were culture positive cases that from these, 10 cases *B. melitensis* (59%) and *B. abortus* were 7 cases (41%). With the PCR technique 25 cases (48%) was positive, that from these cases, 12 cases (48%) *B. abortus* and 13 cases (52%) *B. melitensis* were diagnosed. It is interesting that all 17 samples with positive culture, PCR were positive.

Conclusion: Generally, the use of molecular technique multiplex PCR in addition to overall speed and accuracy and less false results of the methods of bacterial culture is able to identify the different species of Brucella. This will facilitate the treatment process.

Keywords: *Brucella abortus; Brucella melitensis*; Multiplex PCR; Culture