Sensitivity and Specificity of Nucleic Acid Sequence-Based Amplification Method for Diagnosis of Cutaneous Leishmaniasis

Abstract

**Background and Objective:** Culture, microscopic method is a gold standard method for identification of *Lischmania* parasite. The use of Molecular methods such as RT-PCR compared to microscopic methods has a higher sensitivity and specificity; however, it is not widely used due to its expensive equipment and the time requested. The use of nucleic acid sequence based amplification (NASBA) method is highly valuable for diagnosis of live parasite because there is no need for to use Thermo cycler. We aimed to assess sensitivity and specificity of NASBA for molecular detection of cutaneous Leishmaniasis.

**Material and Methods:** First, the RNA was extracted from 28 skin biopsies suspected cutaneous Leishmaniasis. Then, by means of specific primers designed for 18srRNA region, this region was amplified using NASBA isothermal amplification. To increase the sensitivity, the product was electroforezed in TBE (IX) buffer, using Syber Gold Flourecent probes. Using specific primers, RT-PCR was conducted on the samples too.

**Result:** For diagnosis of Leishmania parasites, NASBA and RT-PCR had the sensitivity of 81% and 51%, respectively, and specificity of 100%.

**Conclusion:** NASBA isothermal method with high sensitivity and specificity can be applied for identification of cutaneous leishmaniasis.

**Keywords:** Cutaneous Leishmaniasis, NASBA, 18S rRNA

---

Niazi, A. (MSc)
MSc of Medical Biotechnology, Faculty of Advanced Medical Technologies, Golestan University of Medical Sciences, Gorgan, Iran

Koohsar, F. (MSc)
PhD Student of Parasitology, Laboratory Science Research Center, Golestan University of Medical Sciences, Gorgan, Iran

Ghaffarifar, F. (PhD)
Associate Professor of Parasitology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

Ziaei-Hezarjaribi, H. (PhD)
Assistant Professor of Parasitology, Deo of Parasitology, School of Medicine, Mazandaran University of Medical Sciences, Sari, Iran

Mesgarian, F. (MSc)
MSc of Parasitology, Gonbad Health Center, Golestan University of Medical Sciences, Gorgan, Iran

Jorjani, O. (PhD)
Assistant Professor of Parasitology, Laboratory Science Research Center, Golestan University of Medical Sciences, Gorgan, Iran

**Corresponding Author:** Jorjani, O.
**Email:** niaz_jorjani@yahoo.com

Received: 3 Dec 2013
Revised: 17 Dec 2013
Accepted: 18 Dec 2013