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Noninvasive molecular diagnosis of human visceral leishmaniasis

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Visceral leishmaniasis is a vector borne disease which affects 0.5 million people around the world per annum. Its accurate diagnosis and definitive cure still requires attention. The gold standard procedure of diagnosis of symptomatic VL is parasite demonstration in spleen biopsy, which carries risk of intra abdominal hemorrhage. Bone marrow aspirates is often done but due to its low sensitivity and highly painful procedure fails to make it better choice for diagnosis. The detection of Leishmania DNA by polymerase chain reaction (PCR) in splenic, bone marrow or blood samples is an important advance in molecular diagnosis of Visceral Leishmaniasis (VL). We for the first time introduce use of noninvasively obtained buccal swab samples in molecular diagnosis of VL. In this study we performed PCR from buccal swabs; multicopy rRNA (Small Subunit Unit, SSU) gene was used as the target region for amplification of *L. donovani*. The PCR assay was optimized and sensitivity was determined in 307 subjects including 148 parasitological confirmed VL patients, 39 healthy controls from non endemic region, 92 endemic healthy controls and 28 subjects of different diseases such as malaria, tuberculosis etc. The results were encouraging, buccal swab samples were positive in 123 out of 148 patients (sensitivity 83.11%, 95% CI, 76.25-88.29). The developed assay was 100% specific as none of the non endemic healthy control samples amplified. The specificity in healthy controls of endemic region was 86% (95% CI, 77.31-91.55) and in different disease group it was 92.85%. Molecular diagnosis using buccal cells provide new tool for absolutely specific, highly sensitive and easy diagnosis for all type of symptomatic VL cases. This assay can also open new prospects for epidemiological studies in endemic population.

Biography

Manisha Vaish has completed her PhD in Biotechnology from one of most prestigious institution of India, Banaras Hindu University in year 2011 at age of 27. She has four publications in international journals during her PhD.

She has already developed the idea of working as a researcher in early youth. She maintained excellent academic records throughout with Biology being my favorite subject. It then became a significant point of turn, when she opted to participate in examination for admission in biotechnology. She made it in first attempt and was placed in one of top rated places, Allahabad Agricultural Institute Deemed University, India. Meanwhile she got a national fellowship (GATE) to carry on research in India.