ABSTRACT

The present study aims at isolation and identification of dermatophyte species involved in ringworm infections of human infections at Shimla, Solan and Parwanoo regions of Himachal Pradesh using conventional methods as well as PCR amplification based method using regions of rRNA as a target. A total of 202 samples of skin scrapings, nail clippings and hair were collected from the patients at the specified places. The dermatophytes species were recovered from 74 samples and identified as *Trichophyton mentagrophyte* (47), *T. rubrum* (26) and *Microsporum gypseum* (one) based on colony characteristics, microscopic examination of the lactophenol cotton blue stained preparations, hair perforation test and urease test. Among the tinea/ringworm infections, tinea corporis (37.83%) was the predominant condition involved followed by tinea cruris (27.02%), tinea pedis and tinea unguium (12.16% each), tinea faciei (5.41%), tinea manuum (4.1%), tinea gladiatorum (1.35%). The occurrence of dermatophytosis was more in the male patients as compared to females. The age group of 21-50 years was most affected. The unhygienic conditions, low socioeconomic group including laborers and construction workers and visitors/tourists from other states were some of the factors associated with the epidemiology of dermatophytes in the state. Following the standard protocol M38A2 of Clinical and Laboratory Standard Institute (CLSI, 2008), for determining the susceptibility of 53 isolates to antifungal drugs itraconazole, terbinafine and ketoconazole by broth micro-dilution method. The ranges, Mean values, MIC$_{50}$ and MIC$_{90}$ of these drugs have been determined. Based on these values ketoconazole and itraconazole were more effective as compare to terbinafine. A total of 14 isolates (*T. mentagrophyte*-10, *T. rubrum* -3, *M. gypseum* -1) were used in PCR assay using ITS regions of rRNA as target of amplification. The nucleotide sequencing of the amplicons revealed that *T. mentagrophyte* isolates identified by conventional methods were identified as *T. mentagrophyte var. interdigitale* as its amplicon showed 98-99% homology with the published NCBI sequences. Similarly, *T. rubrum* isolates proved to be *T. rubrum* as the isolates showed 97-99% homology and a solitary isolate of *M. gypseum* (VBS-32) was identified as *Arthroderma gypseum*. The *Microsporum gypseum* was previously named as *Arthroderma gypseum*. The amplification of ITS regions can thus, supplement the conventional methods of identification of dermatophyte species as disconcordance was not observed between the conventional and molecular methods.