**Objectives**:

*Trichophyton indotineae* is an emerging dermatophyte species of significant global concern for its contagious nature and antifungal resistance. The emergence of antifungal-resistant dermatophytosis has been driven by an epidemiological shift in the predominant dermatophyte species, with *T. indotineae* surpassing *T. rubrum* between 2017 and 2020. The present study aimed to monitor trends in *Trichophyton* species and their antifungal resistance isolated from cases of extensive superficial dermatophytosis patients enrolled during the period of one year 2023- 2024 in the dermatology outpatient department of a single hospital in Delhi.

**Materials & Methods:**

A total of 100 clinically suspected cases of Tinea corporis/Tinea cruris, onychomycosis and Tinea capitis, were screened and clinical specimens comprising of skin scrapings (n=83), nail clippings (n=18) and hair samples (n=2) were collected. Identification at species level was confirmed by ITS (Internal Transcribed Spacer) sequencing and antifungal susceptibility testing was performed following CLSI-BMD M38. Target gene sequencing of *SQLE* (Squalene epoxidase) gene was performed for terbinafine-resistant (MIC value ≥ 1mg/L) and 10 susceptible isolates (MIC <1mg/L). Further, whole genome sequencing was performed for 10 isolates by Illumina HiSeq 4000.

**Results**:

All clinical samples yielded growth of *Trichophyton* species. The distribution of *Trichophyton* spp, were *T. indotineae* 59% (n=59), *T. rubrum* as 24% (n=24), *T. mentagrophytes* 13% (n=13), and *T. interdigitale* 4% (n=4). *T. indotineae* was primarily obtained from skin scrapings (67%), while *T. rubrum* predominates in nail clippings (72%). Overall, high terbinafine resistance in 53% isolates (MIC ≥1 mg/L) was recorded. Remarkably, 76% of *T. indotineae* (n=45), and 21% of *T. rubrum* (n=5) and two isolates of *T. mentagrophytes* and a single strain of *T. interdigitale* showed high MIC for TRB. For itraconazole, 26% *T. indotineae*, and two isolates each of *T. rubrum* and *T. mentagrophytes* exhibited high MIC-values ≥ 0.125 mg/L. Further high griseofulvin MIC-value of≥ 16mg/L was observed in 34% *T. indotineae*, and 7.6% *T. mentagrophytes*. Phe397Leu was the commonest substitution in the SQLEp in *T. indotineae* , *T. rubrum* and *T. mentagrophytes* strains with high terbinafine MIC (≥2mg/L). Also Leu393Phe were detected in *T. indotineae* in one isolate. Ala448Thr coexisted with Phe397Leu. Leu393Ser, Leu419Phe + Leu393Ser were associated with low terbinafine MIC ≤ 0.5mg/L. WGS analysis showed three non-synonymous mutation D441G, Y444H, G445S in *CYP51B* gene in terbinafine resistant *T. indotineae*. Further SNP analysis shows genetic similarity among all *T. indotineae* isolates, with a median SNP difference of 125 (ranging from 28 to 390 SNPs).

**Conclusions**:

The study demonstrates high terbinafine and itraconazole resistance in *T. indotineae* and paralell increase in terbinafine reistance in *T. rubrum*. Itraconazole is an alternative drug for treatment of terbinafine resistant *T indotineae*, therefore the increasing trend of itraconazole resistance is highly concerning as treatment options becomes limited.