PCR-based diagnostic technique for early identification of microsporidians infecting mulberry and non-mulberry silkworms

Microsporidia are spore forming parasites that infect silkworms causing the deadly pebrine disease leading to heavy crop loss. Routine diagnosis of microsporidial infections is performed by light microscopy and definitive identification of the species is achieved through Transmission Electron Microscopy (TEM) which are time consuming/expensive and not feasible for routine diagnosis. PCR based molecular methods are widely utilized due to their superior sensitivity, relatively rapid turnaround time, and ability to identify slow growing or difficult to culture pathogens. In this direction, three novel sets of oligonucleotide primers were designed from a conserved region of the small-subunit (SSU) rRNA gene and a robust PCR-based diagnostic technique has been developed for early identification of microsporidia infecting mulberry and non-mulberry silkworms. One set of primers can detect all microsporidians in general that include *Nosema*, *Vairimorpha* and other unknown species; another set can specifically identify *Nosema* sp. and the third can specifically identify *Vairimorpha* sp. thus clearly differentiating both the species.