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Molecular Characterization of GTP Binding Protein Gene in Dermatophyte Pathogen Trichophyton rubrum

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Abstract:

Trichophyton rubrum (T. rubrum) is an anthropophilic dermatophyte that is distributed worldwide and causes common cutaneous disease such as mycosis. Although several properties of this fungus have been investigated so far, however a few studies were carried out in the field of molecular biology of this fungus. In the present study we tried to identify its molecular characterization of the goanosin three phosphat (GTP) binding protein gene. Pairs of 21 nt primers were designed from highly conserved regions of the gene in other fungi. The primers were utilized in PCR by using isolated genomic DNA template as well as cytoplasmic RNA of T. rubrum and the PCR and RT-PCR fragments were then sequenced. About 645 nucleotides have been sequenced which encodes a polypeptide with 214 amino acids. Nucleotide sequence comparison in gene data banks (NCBI, NIH) for both the DNA and its deduced amino acid sequence revealed significant homology with GTP binding protein genes and proteins of other eukaryotic cells. The amino acid sequence of the encoded protein was about 64% identical to the sequence of GTP binding protein from other fungi. In summary, we have cloned the first GTP binding protein of dermatophytes and characterized it as a member of this gene family in other eukaryotic cells.

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Nucleic acid sequencing

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