

PRODUCTION OF ANTIMICROBIAL SUBSTANCE BY *PAENIBACILLUS*
STRAINS AGAINST DERMATOPHYTES FUNGI

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The dermatophytes are important agents of human superficial mycosis causing diseases mainly on the skin, hair and nails. The search for new antimicrobial substance against dermatophytes is of great interest. Strains belonging to the genus *Paenibacillus* are able to produce different antimicrobial substances, including non-ribosomal polypeptides, showing antifungal activity. The aim of this study was to select strains of *Paenibacillus* sp. able to inhibit *in vitro* strains of three species dermatophytes (*Tricophyton rubrum*, *Microsporum gypseum* and *M.canis*) and to determine the presence of genes coding for the production of lipopeptides. Initially, 28 strains of 18 species of *Paenibacillus* were used and one strain of *Micrococcus* sp. was used as the indicator strain. Only strains able to inhibit the indicator strain (19 strains) were tested against the dermatophytes. Among them, three strains (KCTC3748, POC115 and PM22-16) showed activity against the dermatophytes and their antimicrobial substances (AMS) were selected for partial characterization. Furthermore, the operon coding for the non-ribosomal peptide-synthase of strain POC115 was also partially characterized. For that, one pair of primers was designed based on conserved domains of this operon and the primers were used for the PCR amplification of a 1,5 Kb fragment which was further cloned and sequenced. This fragment showed high similarity to *Bacillus subtilis* genes coding for an antifungal substance.