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IDENTIFICATION AND BIOSYNTHESIS OF PEPTAIBOLS TRICHOKONINS VI AND VIII WITH ANTIPLASMODIAL ACTIVITY

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The fungus genus *Trichoderma* is found in a wide range of habitats, with more than 200 described species.[1] Secondary metabolites produced by *Trichoderma* spp. have mainly been used commercially in biocontrol.[2] Modified peptides known as peptaibols are commonly produced by *Trichoderma* species. Typical features of peptaibols include an acyl fragment connected at the N-terminal, incorporation of α-aminoisobutyric (Aib) residues, amino alcohol of the reduced amino acid at C-terminal, and presence of other non-proteinogenic amino acids. *Trichoderma* sp. L2-2 strain was obtained from a lichen sample collected at Admiralty Bay in Antarctica. Cultures of *Trichoderma* sp. L2-2 yielded trichokonins VI and VIII after several separation steps. Both peptaibols presented 20 amino acid residues and were completely identified by NMR, HRMS, MS/MS and dichroism circular spectra analyses. The full genome sequencing and analysis of *Trichoderma* sp. L2-2 enabled the identification of a peptaibol biosynthetic gene cluster and the proposal for a biosynthetic assembly of trichokonins VI and VIII. Trichokonins VI and VIII also exhibited antiplasmodial activities at the sub-micromolar range against *Plasmodium falciparum*.

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