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Abstract

A Lipoaminopeptaibol Secreted by Alkalophilic Fungus *Emericellopsis alkalina* Demonstrates a Strong Cytotoxic Effect against Tumor Cell Lines †

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Abstract: Soil fungi are known to produce and secrete antibiotics with a strong antimicrobial effect towards eukaryotic organisms. In many occasions, these compounds belong to peptides that are products of non-ribosomal biosynthesis and are called peptaibols. Many peptaibols are cytotoxic and some of them suppress tumor cell lines much better than normal cells by inducing calcium-mediated apoptosis. The main antimicrobial lipoaminopeptaibol—emericellipsin A—isolated from the fungus *Emericellopsis alkalina* strain VKPM F-1428, which demonstrates promising antifungal activity against different fungal taxons,has been found to exhibit selective cytotoxic activity against HepG2 and Hela cell lines (EC_{50} 2.8 and 0.5 μM, respectively) in MTT assays *in vitro.* This result corresponds to the standard antitumor antibiotic doxorubicin, which has an EC_{50} value of 440 nM. In a fibroblast toxicity test, emericellipsin A exhibited less cytotoxic activity than doxorubicin (EC_{50} 14 and 0.34 μM, respectively). Therefore, it is less toxic to normal cells than doxirubicin (~40 times), but it yields a more potent cytotoxic effect on tumor cell lines. That is why emericellipsin A can be considered for future more detailed investigations to be an effective antitumor substance.

Keywords: peptaibol; emericellipsin A; *Emericellopsis alkalina*; cytotoxic properties

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