Dithiodiketopiperazine derivatives from endophytic fungi Trichoderma harzianum and Epicoccum nigrum

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First Author	Harwoko, Harwoko; Daletos, Georgios; Stuhldreier, Fabian;
Last Author	Proksch, Peter
Authors	Harwoko, H; Daletos, G; Stuhldreier, F; Lee, J; Wesselborg, S; Feldbrugge, M; Muller, WEG; Kalscheuer, R; Ancheeva, E; Proksch, P;
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Abstract	A new epidithiodiketopiperazine (ETP), pretrichodermamide G (1), along with three known (epi)dithiodiketopiparazines (2-4) were isolated from cultures of Trichoderma harzianum and Epicoccum nigrum, endophytic fungi associated with medicinal plants Zingiber officinale and Salix sp., respectively. The structure of the new compound (1) was established on the basis of spectroscopic data, including 1D/2D NMR and HRESIMS. The isolated compounds were investigated for their antifungal, antibacterial and cytotoxic potential against a panel of microorganisms and cell lines. Pretrichodermamide A (2) displayed antimicrobial activity towards the plant pathogenic fungus Ustilago maydis and the human pathogenic bacterium Mycobacterium tuberculosis with MIC values of 1 mg/mL (2 mM) and 25 mu g/mL (50 mu M), respectively. Meanwhile, epicorazine A (3) exhibited strong to moderate cytotoxicity against L5178Y, Ramos, and Jurkat J16 cell lines with IC50 values ranging from 1.3 to 28 mu M. Further mechanistic studies indicated that 3 induces apoptotic cell death.
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Author	Dr.rer.nat. Apt HARWOKO, S.Farm, M.Sc.