TRICHOBREVINS, TRICHOCOMPACTINS, TRICHOCRYPTINS, AND TRICHOFERINS: NEW PEPTAIBIOTICS FROM PLANT-PROTECTIVE STRAINS OF THE TRICHODERMA BREVICOMPACTUM COMPLEX

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Introduction

Species of the fungal genus Trichoderma are commercially used as bioprotective agents against fungal plant diseases in agriculture. More than 400 strains were collected from their natural habitats and evaluated for biocontrol properties in viticulture. The biological activity towards Eutypa dieback and Esca, which are fungal diseases of grapevine trunks, was tested in plate bioassays. Seven of the most active isolates were classified as *Trichoderma brevicompactum*, or shown to be closely related to that species (*Trichoderma* cf. *brevicompactum*) [1].

Result and Discussion

Using recently described procedures [2 – 4], we could detect 68 novel peptaibiotics in these seven strains mentioned above (abbreviation and number of individual peptides produced in parentheses): 12-residue trichocryptins B (TCT-B; 14), 11-residue trichocryptins A (TCT-A; 12), 11-residue trichobrevins A and B (TBV; 19), 10-residue trichoferins (TFR; 6) and 8-residue trichocompactins (TCP; 17). Notably, all isolates also produced alamethicins F-30 [5]. The data support the hypothesis that peptaibiotics may partly be responsible for the established plant-protective activity of the Trichoderma strains tested. Representative major sequences of new peptaibiotics are listed in *Fig. 1*. Taken together, the differential patterns of peptaibiotic production and as well as the production of different trichothecene-type mycotoxins [6] clearly support DNA sequencing results [4]. Both molecular and chemotaxonomic approaches indicate the existence of two species within what has been called *Trichoderma brevicompactum*, so far.

	Residue											
	1	*2*		*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
Peptaibiotic													
TCP IIIa	Ac	Aib	Gly	Ala	Lxx	Vxx	Gly	Lxx	Vxx				
TCT-A IIa	Ac	Lxx	Aib	Pro	Vxx	Aib	Pro	Aib	Lxx	Aib	Pro	Lxxol	
TCT-B IIIb	Ac	Lxx	Aib	Pro	Vxx	Vxx	Aib	Pro	Aib	Lxx	Aib	Pro	Lxxol
TBV-A IIa	Ac	Aib	Ala	Vxx	Vxx	Aib	Pro	Lxx	Lxx	Aib	Pro	Vxxol	
TBV-B IIIc	Ac	Aib	Ser	Vxx	Lxx	Aib	Pro	Lxx	Lxx	Aib	Pro	Lxxol	
TFR-A	MDA	Pro	AHMOD	Ala	Aib	Aib	Lxx	Ala	Aib	Aib	AMAE		

Figure 1. Representative major sequences of new peptaibiotics from strains of the T. brevicompactum complex. ***MDA****, α-**m**ethyl**d**ecanoic **a**cid;* ***AHMOD:*** *2-**a**mino-4-**m**ethyl-6-**h**ydroxy-8-**o**xo-**d**ecanoic acid,* ***AMAE****, 2-[(2'-**a**minopropyl)-**m**ethyl**a**mino]-**e**thanol.*

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