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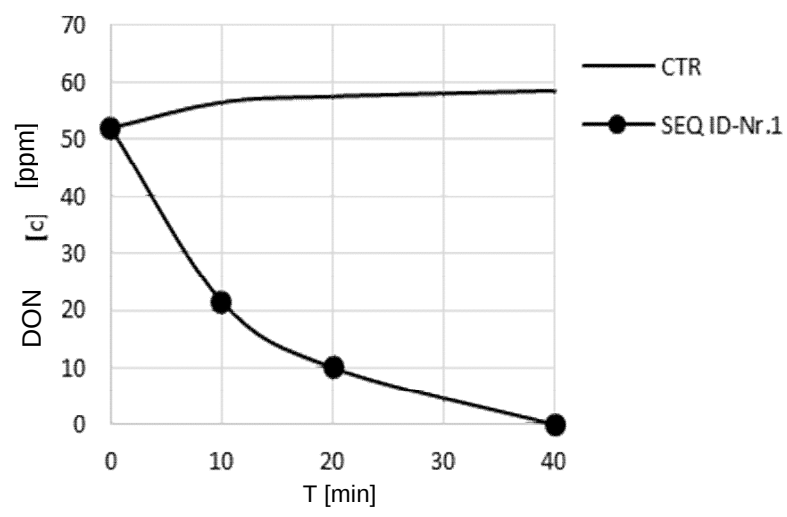


Fig. 1

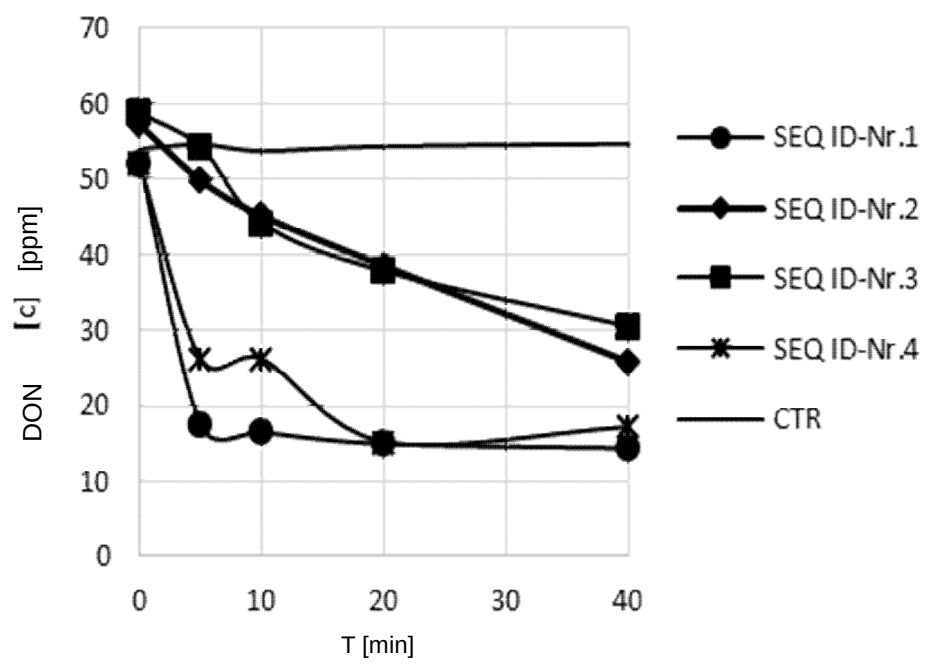


Fig. 2

sequence listing
SEQUENCE LISTING

<110> ERBER Aktiengesellschaft

<120> Trichothecene Transformierende Enzyme

<130> F_Pat_BIO_005/PCT

<160> 4

<170> PatentIn version 3.5

<210> 1

<211> 608

<212> PRT

<213> Pseudogluconobacter sp.

<400> 1

Met Arg Phe Glu Tyr Leu Arg Gln Asn Val Val Gly Leu Ala Leu Ser
1 5 10 15

Thr Ala Leu Ile Ala Ser Leu Ser Gly Pro Ala Phe Ala Gln His Asp
20 25 30

Ala Asn Ala Ala Ala Glu Pro Ser Lys Ala Gly Gln Ser Ala Ile Glu
35 40 45

Asn Phe Gln Pro Val Thr Ala Asp Asp Leu Ala Gly Lys Asn Pro Ala
50 55 60

Asn Trp Pro Ile Leu Arg Gly Asn Tyr Gln Gly Trp Gly Tyr Ser Pro
65 70 75 80

Leu Asp Gln Ile Asn Lys Asp Asn Val Gly Asp Leu Gln Leu Val Trp
85 90 95

Ser Arg Thr Met Glu Pro Gly Ser Asn Glu Gly Ala Ala Ile Ala Tyr
100 105 110

Asn Gly Val Ile Phe Leu Gly Asn Thr Asn Asp Val Ile Gln Ala Ile
115 120 125

Asp Gly Lys Thr Gly Ser Leu Ile Trp Glu Tyr Arg Arg Lys Leu Pro
130 135 140

Ser Ala Ser Lys Phe Ile Asn Ser Leu Gly Ala Ala Lys Arg Ser Ile
145 150 155 160

Ala Leu Phe Gly Asp Lys Val Tyr Phe Val Ser Trp Asp Asn Phe Val
165 170 175

Val Ala Leu Asp Ala Lys Thr Gly Lys Leu Ala Trp Glu Thr Asn Arg
180 185 190

Gly Gln Gly Val Glu Glu Gly Val Ala Asn Ser Ser Gly Pro Ile Val

sequence listing

195		200		205
Val	Asp	Gly	Val	Val
210			Ile	Ala
			215	Gly
	Ser	Thr	Cys	Gln
			220	Phe
	Ser	Gly		Phe
Gly	Cys	Tyr	Val	Thr
225			230	Gly
				Thr
	Asp	Ala	Glu	Ser
			235	Gly
	Glu	Glu	Glu	Leu
				240
Arg	Asn	Thr	Phe	Ile
			245	Pro
	Arg	Pro	Gly	Glu
			250	Glu
	Gly	Asp	Asp	Thr
			255	Trp
Gly	Gly	Ala	Pro	Tyr
			260	Glu
	Asn	Arg	Trp	Met
			265	Thr
	Gly	Ala	Trp	Gly
			270	Gln
Ile	Thr	Tyr	Asp	Pro
			275	Glu
	Leu	Asp	Leu	Val
			280	Tyr
	Tyr	Gly	Ser	Thr
			285	Gly
Ala	Gly	Pro	Ala	Ser
			290	Glu
	Val	Gln	Arg	Gly
			295	Thr
	Glu	Gly	Gly	Thr
			300	Leu
Ala	Gly	Thr	Asn	Thr
305			310	Arg
	Phe	Ala	Val	Lys
			315	Pro
	Lys	Thr	Gly	Glu
				320
Val	Trp	Lys	His	Gln
			325	Thr
	Leu	Pro	Arg	Asp
			330	Asn
	Trp	Asp	Ser	Glu
			335	Cys
Thr	Phe	Glu	Met	Met
			340	Val
	Val	Ser	Thr	Ser
			345	Val
	Asn	Pro	Asp	Ala
			350	Lys
Ala	Asp	Gly	Met	Met
			355	Ser
	Val	Gly	Ala	Asn
			360	Val
	Pro	Arg	Gly	Glu
			365	Thr
Arg	Lys	Val	Leu	Thr
370			375	Gly
	Pro	Cys	Lys	Thr
			380	Gly
	Val	Ala	Trp	Gln
Phe	Asp	Ala	Lys	Thr
385			390	Gly
	Asp	Tyr	Phe	Trp
			395	Ser
	Lys	Ala	Thr	Val
				400
Gln	Asn	Ser	Ile	Ala
			405	Ser
	Ile	Asp	Asp	Thr
			410	Gly
	Leu	Val	Thr	Val
				415
Glu	Asp	Met	Ile	Leu
			420	Lys
	Glu	Pro	Gly	Lys
			425	Thr
	Tyr	Asn	Tyr	Cys
			430	Pro
Thr	Phe	Leu	Gly	Gly
			435	Arg
	Asp	Trp	Pro	Ser
			440	Ala
	Gly	Tyr	Leu	Pro
			445	Lys
Ser	Asn	Leu	Tyr	Val
450			455	Ile
	Pro	Leu	Ser	Asn
			460	Ala
	Cys	Tyr	Asp	Val
				Met
Ala	Arg	Thr	Thr	Glu
				Ala
	Thr	Pro	Ala	Asp
				Val
	Tyr	Asn	Thr	Asp
				Ala

sequence listing

sequence listing

Leu Ile Trp Glu Tyr Arg Arg Lys Leu Pro Pro Ala Ser Lys Phe Ile
 115 120 125
 Asn Ser Leu Gly Ala Ala Lys Arg Ser Ile Ala Leu Phe Gly Asp Lys
 130 135 140
 Val Tyr Phe Val Ser Trp Asp Asn Phe Val Val Ala Leu Asp Ala Lys
 145 150 155 160
 Thr Gly Lys Leu Ala Trp Glu Thr Asn Arg Gly Gln Gly Val Glu Glu
 165 170 175
 Gly Val Ser Asn Ser Ser Gly Pro Ile Val Val Asp Gly Val Val Ile
 180 185 190
 Ala Gly Ser Thr Cys Gln Tyr Ser Gly Phe Gly Cys Tyr Val Thr Gly
 195 200 205
 Thr Asp Ala Glu Ser Gly Glu Glu Leu Trp Arg Asn Thr Phe Ile Pro
 210 215 220
 Arg Pro Gly Glu Glu Gly Asp Asp Thr Trp Gly Gly Ala Pro Tyr Glu
 225 230 235 240
 Asn Arg Trp Met Thr Gly Ala Trp Gly Gln Ile Thr Tyr Asp Pro Glu
 245 250 255
 Leu Asp Leu Val Tyr Tyr Gly Ser Thr Gly Ala Gly Pro Ala Ser Glu
 260 265 270
 Val Gln Arg Gly Thr Glu Gly Gly Thr Leu Ala Gly Thr Asn Thr Arg
 275 280 285
 Phe Ala Val Lys Pro Lys Thr Gly Glu Val Val Trp Lys His Gln Thr
 290 295 300
 Leu Pro Arg Asp Asn Trp Asp Ser Glu Cys Thr Phe Glu Met Met Val
 305 310 315 320
 Val Ser Thr Thr Val Asn Pro Asp Ala Gly Ala Asp Gly Met Met Ser
 325 330 335
 Val Gly Ala Asn Val Pro Arg Gly Glu Thr Arg Lys Val Leu Thr Gly
 340 345 350
 Val Pro Cys Lys Thr Gly Val Ala Trp Gln Phe Asp Ala Glu Thr Gly
 355 360 365
 Asp Tyr Phe Trp Ser Lys Ala Thr Val Glu Gln Asn Ser Ile Ala Ser
 370 375 380

sequence listing

Ile Asp Asp Lys Gly Leu Val Thr Val Asn Glu Asp Met Ile Leu Lys
385 390 395 400

Glu Pro Gly Lys Asp Tyr Asn Tyr Cys Pro Thr Phe Leu Gly Gly Arg
405 410 415

Asp Trp Pro Ser Ala Gly Tyr Leu Pro Lys Ser Asn Leu Tyr Val Ile
420 425 430

Pro Leu Ser Asn Ala Cys Tyr Asp Leu Lys Ala Arg Thr Thr Glu Ala
435 440 445

Thr Pro Ala Asp Val Tyr Asn Thr Asp Ser Thr Val Lys Leu Ala Pro
450 455 460

Gly Lys Thr Asn Met Gly Arg Val Asp Ala Ile Asp Val Ala Thr Gly
465 470 475 480

Ala Thr Lys Trp Ser Phe Glu Thr Glu Ala Ala Leu Tyr Asp Pro Val
485 490 495

Met Thr Thr Ala Gly Asp Leu Val Phe Val Gly Ser Thr Asp Arg Met
500 505 510

Phe Arg Ala Leu Asp Ala Glu Thr Gly Lys Glu Val Trp Ser Thr Arg
515 520 525

Leu Pro Gly Ala Ile Ser Gly Tyr Thr Thr Ser Tyr Ser Ile Asp Gly
530 535 540

Arg Gln Tyr Val Ala Val Val Ala Gly Gly Ser Leu Gly Thr Gly Phe
545 550 555 560

Phe Lys Ala Ala Val Pro Gly Val Asp Ala Val Gln Gly Gly Asn Gly
565 570 575

Ile Tyr Val Phe Ala Leu Pro Glu Ala Lys
580 585

<210> 3
<211> 603
<212> PRT
<213> Devosia sp.

<400> 3

Met Arg Gln Asn Val Val Gly Leu Ala Leu Ser Thr Ala Leu Ile Ala
1 5 10 15

Ser Leu Ser Ala Pro Ala Phe Ala Gln His Ala Asp Gly Ala Ala Ala
20 25 30

sequence listing

Glu Thr Ala Ala Pro Gly Gln Ser Ala Ile Glu Asn Phe Gln Pro Val
 35 40 45
 Thr Ala Glu Asp Leu Ala Gly Gly Asn Ala Ala Asn Trp Pro Ile Leu
 50 55 60
 Arg Gly Asn Tyr Gln Gly Trp Gly Tyr Thr Gln Leu Asp Gln Ile Asn
 65 70 75 80
 Lys Asp Asn Val Gly Gln Leu Gln Leu Ala Trp Ala Arg Thr Met Glu
 85 90 95
 Pro Gly Ser Asn Glu Gly Ser Ala Ile Ala Tyr Asn Gly Val Val Phe
 100 105 110
 Leu Gly Asn Ala Asn Asp Val Val Gln Ala Ile Asp Gly Lys Thr Gly
 115 120 125
 Asn Leu Ile Trp Glu Tyr Arg Arg Lys Leu Pro Pro Ala Ser Lys Phe
 130 135 140
 Ile Asn Ser Leu Gly Ala Ala Lys Arg Ser Ile Ala Leu Phe Gly Asp
 145 150 155 160
 Lys Val Tyr Phe Val Ser Trp Asp Asn Phe Val Val Ala Leu Asp Ala
 165 170 175
 Lys Thr Gly Lys Leu Ala Trp Glu Thr Asn Arg Gly Gln Gly Val Glu
 180 185 190
 Glu Gly Val Ser Asn Ser Ser Gly Pro Ile Val Val Asp Gly Val Val
 195 200 205
 Ile Ala Gly Ser Thr Cys Gln Tyr Ser Gly Phe Gly Cys Tyr Val Thr
 210 215 220
 Gly Thr Asp Ala Glu Ser Gly Glu Glu Leu Trp Arg Asn Thr Phe Ile
 225 230 235 240
 Pro Arg Pro Gly Glu Glu Gly Asp Asp Thr Trp Gly Gly Ala Pro Tyr
 245 250 255
 Glu Asn Arg Trp Met Thr Gly Ala Trp Gly Gln Ile Thr Tyr Asp Pro
 260 265 270
 Glu Leu Asp Leu Val Tyr Tyr Gly Ser Thr Gly Ala Gly Pro Ala Ser
 275 280 285
 Glu Val Gln Arg Gly Thr Glu Gly Gly Thr Leu Ala Gly Thr Asn Thr
 290 295 300

sequence listing

Arg Phe Ala Val Lys Pro Lys Thr Gly Glu Val Val Trp Lys His Gln
 305 310 315 320
 Thr Leu Pro Arg Asp Asn Trp Asp Ser Glu Cys Thr Phe Glu Met Met
 325 330 335
 Val Val Ser Thr Thr Val Asn Pro Asp Ala Gly Ala Asp Gly Met Met
 340 345 350
 Ser Val Gly Ala Asn Val Pro Arg Gly Glu Thr Arg Lys Val Leu Thr
 355 360 365
 Gly Val Pro Cys Lys Thr Gly Val Ala Trp Gln Phe Asp Ala Glu Thr
 370 375 380
 Gly Asp Tyr Phe Trp Ser Lys Ala Thr Val Glu Gln Asn Ser Ile Ala
 385 390 395 400
 Ser Ile Asp Asp Lys Gly Leu Val Thr Val Asn Glu Asp Met Ile Leu
 405 410 415
 Lys Glu Pro Gly Lys Asp Tyr Asn Tyr Cys Pro Thr Phe Leu Gly Gly
 420 425 430
 Arg Asp Trp Pro Ser Ala Gly Tyr Leu Pro Lys Ser Asn Leu Tyr Val
 435 440 445
 Ile Pro Leu Ser Asn Ala Cys Tyr Asp Leu Lys Ala Arg Thr Thr Glu
 450 455 460
 Ala Thr Pro Ala Asp Val Tyr Asn Thr Asp Ser Thr Val Lys Leu Ala
 465 470 475 480
 Pro Gly Lys Thr Asn Met Gly Arg Val Asp Ala Ile Asp Val Ala Thr
 485 490 495
 Gly Ala Thr Lys Trp Ser Phe Glu Thr Glu Ala Ala Leu Tyr Asp Pro
 500 505 510
 Val Met Thr Thr Ala Gly Asp Leu Val Phe Val Gly Ser Thr Asp Arg
 515 520 525
 Met Phe Arg Ala Leu Asp Ala Glu Thr Gly Lys Glu Val Trp Ser Thr
 530 535 540
 Arg Leu Pro Gly Ala Ile Ser Gly Tyr Thr Thr Ser Tyr Ser Ile Asp
 545 550 555 560
 Gly Arg Gln Tyr Val Ala Val Val Ala Gly Gly Ser Leu Gly Thr Gly
 565 570 575

sequence listing

Phe Phe Lys Ala Ala Val Pro Gly Val Asp Ala Val Gln Gly Gly Asn
580 585 590

Gly Ile Tyr Val Phe Ala Leu Pro Glu Ala Lys
595 600

<210> 4
<211> 609
<212> PRT
<213> Devosia sp.
<400> 4

Met Arg Phe Glu Cys Ile Arg Gln Asn Ala Val Gly Leu Ala Leu Ser
1 5 10 15

Thr Ala Leu Ile Ala Ser Leu Ser Ala Pro Ala Phe Ala Gln His Ala
20 25 30

Asp Gly Ala Ala Thr Glu Ala Val Ser Ala Gln Ser Ala Ile Glu Asn
35 40 45

Phe Lys Pro Val Thr Ala Glu Asp Ile Ala Gly Ala Asn Ser Ala Asn
50 55 60

Trp Pro Ile Leu Arg Gly Asn Tyr Asn Gly Trp Gly Tyr Thr Pro Leu
65 70 75 80

Asp Gln Ile Asn Lys Asp Asn Val Gly Gln Leu Gln Leu Ala Trp Ser
85 90 95

Arg Thr Met Glu Pro Gly Ser Asn Glu Gly Ala Ala Ile Ala Tyr Asn
100 105 110

Gly Val Val Tyr Leu Gly Asn Ala Asn Asp Val Ile Gln Ala Ile Asp
115 120 125

Gly Lys Thr Gly Asp Leu Ile Trp Glu Tyr Arg Arg Lys Leu Pro Pro
130 135 140

Ala Ser Lys Phe Ile Asn Ser Leu Gly Gln Ala Lys Arg Ser Ile Ala
145 150 155 160

Leu Phe Gly Asp Lys Val Tyr Phe Val Ser Trp Asp Asn Phe Val Ala
165 170 175

Ala Leu Asp Ala Lys Thr Gly Lys Leu Ala Trp Glu Thr Asn Arg Gly
180 185 190

Gln Gly Val Asp Glu Gly Val Ser Asn Ser Ser Gly Pro Ile Val Val
195 200 205

sequence listing

Asp Gly Val Val Ile Ala Gly Thr Thr Cys Gln Phe Ser Gly Phe Gly
210 215 220

Cys Tyr Val Thr Gly Thr Asp Ala Glu Ser Gly Glu Glu Leu Trp Arg
225 230 235 240

Asn Thr Phe Ile Pro Arg Pro Gly Glu Glu Gly Asp Asp Thr Trp Gly
245 250 255

Gly Ala Pro Tyr Glu Asn Arg Trp Met Thr Gly Ala Trp Gly Gln Ile
260 265 270

Thr Tyr Asp Pro Glu Leu Asp Leu Val Tyr Tyr Gly Ser Thr Gly Ala
275 280 285

Gly Pro Ala Ser Glu Val Gln Arg Gly Thr Glu Gly Gly Thr Leu Ala
290 295 300

Gly Thr Asn Thr Arg Phe Ala Val Lys Pro Lys Thr Gly Glu Val Val
305 310 315 320

Trp Lys His Gln Thr Leu Pro Arg Asp Asn Trp Asp Gln Glu Cys Thr
325 330 335

Phe Glu Met Met Val Val Ser Thr Thr Val Asn Pro Asn Ala Asp Ala
340 345 350

Glu Gly Met Phe Ser Val Gly Ala Thr Leu Pro Arg Gly Glu Ser Arg
355 360 365

Lys Val Leu Thr Gly Val Pro Cys Lys Thr Gly Val Ala Trp Gln Phe
370 375 380

Asp Ala Glu Thr Gly Asp Tyr Phe Trp Ser Lys Ala Thr Val Ala Gln
385 390 395 400

Asn Ala Val Ala Ser Ile Asp Asp Lys Gly Leu Val Thr Val Asn Glu
405 410 415

Asp Met Ile Ile Lys Glu Pro Gly Lys Asn Tyr Glu Phe Cys Pro Thr
420 425 430

Phe Leu Gly Gly Arg Asp Trp Pro Ser Ala Gly Tyr Leu Pro Ala Ser
435 440 445

Asn Leu Tyr Val Ile Pro Leu Ser Gln Ala Cys Tyr Asp Leu Thr Ala
450 455 460

Arg Thr Thr Glu Ala Thr Pro Ala Asp Val Tyr Asn Thr Asp Ala Thr
465 470 475 480

sequence listing

Val Lys Leu Ala Pro Gly Arg Thr Asn Met Gly Arg Val Asp Ala Ile
485 490 495

Asp Leu Ala Thr Gly Glu Thr Lys Trp Ser Phe Glu Thr Thr Ala Ala
500 505 510

Leu Tyr Asp Pro Val Met Thr Thr Gly Gly Asp Leu Val Phe Val Gly
515 520 525

Ser Thr Asp Arg Val Tyr Arg Ala Leu Asp Ala Ala Thr Gly Lys Glu
530 535 540

Val Trp Ser Thr Arg Ile Pro Gly Ala Ile Ser Gly Phe Thr Thr Ser
545 550 555 560

Tyr Ser Leu Asp Gly Arg Gln Tyr Val Ala Val Leu Ala Gly Gly Ser
565 570 575

Leu Gly Thr Ser Phe Phe Lys Ala Ala Val Pro Asn Val Asp Ala Val
580 585 590

Gln Gly Gly Asn Gly Ile Tyr Val Phe Ala Leu Pro Asp Ala Lys Ile
595 600 605

Glu