

116377_00018_ST25
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XU, Meng
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<120> FUNCTIONAL MUNG BEAN-DERIVED COMPOSITIONS

<130> 116377.00018

<150> US 62/297,788

<151> 2016-02-19

<150> US 62/433,182

<151> 2016-12-12

<160> 15

<170> PatentIn version 3.5

<210> 1

<211> 453

<212> PRT

<213> Vigna radiata var. radiata

<400> 1

Met Met Ser Ala Arg Val Pro Leu Leu Leu Leu Gly Ile Leu Phe
1 5 10 15

Leu Ala Ser Leu Ser Val Ser Phe Gly Ile Val His Arg Glu Asn His
20 25 30

Asp Ala Ala Glu Val Ser Val Ser Arg Gly Lys Asn Asn Pro Phe Tyr
35 40 45

Phe Asn Ser Asp Arg Trp Phe Arg Thr Leu Phe Arg Asn Glu Phe Gly
50 55 60

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His Leu Arg Val Leu Gln Arg Phe Asp Gln Arg Ser Lys Gln Met Gln
65 70 75 80

Asn Leu Glu Asn Tyr Arg Val Val Glu Phe Gln Ser Lys Pro Asn Thr
85 90 95

Leu Leu Leu Pro His His Ala Asp Ala Asp Phe Leu Leu Val Val Leu
100 105 110

Asn Gly Arg Ala Val Leu Thr Leu Val Asn Pro Asp Gly Arg Asp Ser
115 120 125

His Ile Leu Glu Gln Gly His Ala Gln Lys Ile Pro Ala Gly Thr Ile
130 135 140

Phe Phe Leu Val Asn Pro Asp Asp Asn Glu Asn Leu Arg Ile Ile Lys
145 150 155 160

Leu Ala Val Pro Val Asn Asn Pro His Arg Phe Gln Asp Phe Phe Leu
165 170 175

Ser Ser Thr Glu Ala Gln Gln Ser Tyr Leu Gln Gly Phe Ser Lys Asn
180 185 190

Ile Leu Glu Ala Ser Phe Asp Ser Asp Ile Lys Glu Ile Asn Arg Val
195 200 205

Leu Phe Gly Glu Glu Gly Gln Gln Gln Gln Gln Gly Gln Glu Ser Gln
210 215 220

Gln Glu Gly Val Ile Val Glu Leu Lys Arg Glu Gln Ile Arg Glu Leu
225 230 235 240

Thr Lys His Ala Lys Ser Ser Ser Lys Lys Ser Leu Ser Ser Glu Asp
245 250 255

Gln Pro Phe Asn Leu Arg Asn Gln Lys Pro Ile Tyr Ser Asn Lys Phe
260 265 270

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Gly Glu Phe Tyr Glu Ile Thr Pro Lys Lys Asn Pro Gln Leu Lys Asp
275 280 285

Leu Asp Val Phe Ile Ser Ser Val Asp Met Lys Glu Gly Ser Leu Leu
290 295 300

Leu Pro His Tyr Asn Ser Lys Ala Ile Val Ile Leu Val Ile Asn Glu
305 310 315 320

Gly Glu Ala Asn Ile Glu Leu Val Gly Leu Arg Glu Glu Gln Gln Gln
325 330 335

Gln Gln Gln Asp Glu Arg Leu Glu Val Gln Arg Tyr Arg Ala Glu Val
340 345 350

Ser Glu Asp Asp Val Phe Val Ile Pro Ala Ala Tyr Pro Val Ala Ile
355 360 365

Asn Ala Thr Ser Asn Leu Asn Phe Phe Ala Phe Gly Ile Asn Ala Glu
370 375 380

Asn Asn Gln Arg Asn Phe Leu Ala Gly Glu Lys Asp Asn Val Ile Ser
385 390 395 400

Glu Ile Pro Thr Glu Val Leu Asp Leu Ala Phe Pro Ala Pro Gly Glu
405 410 415

Lys Val Glu Lys Leu Val Gln Lys Gln Ser Thr Ser His Phe Val Asp
420 425 430

Ala Gln Pro Glu Glu Gln Gln Arg Glu Glu Gly Pro Lys Gly Arg Lys
435 440 445

Gly His Phe Val Tyr
450

<210> 2
<211> 453

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<212> PRT

<213> *Vigna radiata*

<400> 2

Met Ser Ala Arg Val Pro Leu Leu Leu Leu Leu Gly Ile Leu Phe Leu
 1 5 10 15

Ala Ser Leu Ser Val Ser Phe Gly Ile Val His Arg Glu Asn His Asp
 20 25 30

Ala Ala Glu Val Ser Val Ser Arg Gly Lys Asn Asn Pro Phe Tyr Phe
 35 40 45

Asn Ser Asp Arg Trp Phe Arg Thr Leu Phe Arg Asn Glu Phe Gly His
 50 55 60

Leu Arg Val Leu Gln Arg Phe Asp Gln Arg Ser Lys Gln Met Gln Asn
 65 70 75 80

Leu Glu Asn Tyr Arg Val Val Glu Phe Gln Ser Lys Pro Asn Thr Leu
 85 90 95

Leu Leu Pro His His Ala Asp Ala Asp Phe Leu Leu Val Val Leu Asn
 100 105 110

Gly Arg Ala Val Leu Thr Leu Val Asn Pro Asp Gly Gly Arg Asp Ser
 115 120 125

His Ile Leu Glu Gln Gly His Ala Gln Lys Ile Pro Ala Gly Thr Ile
 130 135 140

Phe Phe Leu Val Asn Pro Asp Asp Asn Glu Asn Leu Arg Ile Ile Lys
 145 150 155 160

Leu Ala Val Pro Val Asn Asn Pro His Arg Phe Gln Asp Phe Phe Leu
 165 170 175

Ser Ser Thr Glu Ala Gln Gln Ser Tyr Leu Gln Gly Phe Ser Lys Asn
 180 185 190

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Ile Leu Glu Ala Ser Phe Asp Ser Asp Ile Lys Glu Ile Asn Arg Val
195 200 205

Leu Phe Gly Glu Glu Gly Gln Gln Gln Gln Gln Gly Gln Glu Ser Gln
210 215 220

Gln Glu Gly Val Ile Val Glu Leu Lys Arg Glu Gln Ile Arg Glu Leu
225 230 235 240

Thr Lys His Ala Lys Ser Ser Ser Lys Lys Ser Leu Ser Ser Glu Asp
245 250 255

Gln Pro Phe Asn Leu Arg Asn Gln Lys Pro Ile Tyr Ser Asn Lys Phe
260 265 270

Gly Glu Phe Tyr Glu Ile Thr Pro Lys Lys Asn Pro Gln Leu Lys Asp
275 280 285

Leu Asp Val Phe Ile Ser Ser Val Asp Met Lys Glu Gly Ser Leu Leu
290 295 300

Leu Pro His Tyr Asn Ser Lys Ala Ile Val Ile Leu Val Ile Asn Glu
305 310 315 320

Gly Glu Ala Asn Ile Glu Leu Val Gly Leu Arg Glu Glu Gln Gln Gln
325 330 335

Gln Gln Gln Asp Glu Arg Leu Glu Val Gln Arg Tyr Arg Ala Glu Val
340 345 350

Ser Glu Asp Asp Val Phe Val Ile Pro Ala Ala Tyr Pro Val Ala Ile
355 360 365

Asn Ala Thr Ser Asn Leu Asn Phe Phe Ala Phe Gly Ile Asn Ala Glu
370 375 380

Asn Asn Gln Arg Asn Phe Leu Ala Gly Glu Lys Asp Asn Val Ile Ser
385 390 395 400

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Glu Ile Pro Thr Glu Val Leu Asp Leu Ala Phe Pro Ala Pro Gly Glu
 405 410 415

Lys Val Glu Lys Leu Val Gln Lys Gln Ser Thr Ser His Phe Val Asp
 420 425 430

Ala Gln Pro Glu Glu Gln Gln Arg Glu Glu Gly Pro Lys Gly Arg Lys
 435 440 445

Gly His Phe Val Tyr
 450

<210> 3
 <211> 454
 <212> PRT
 <213> Vigna radiata var. radiata

<220>
 <221> misc_feature
 <222> (56)..(57)
 <223> Xaa can be any naturally occurring amino acid

<400> 3

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 1 5 10 15

Leu Ala Ser Leu Ser Val Ser Phe Gly Ile Val His Arg Glu Asn Ile
 20 25 30

Asp Gly Ala Glu Val Ser Val Ser Arg Gly Lys Asn Asn Pro Phe Tyr
 35 40 45

Phe Asn Ser Asp Arg Trp Phe Xaa Xaa Leu Phe Arg Asn Gln Phe Gly
 50 55 60

His Leu Arg Val Leu Gln Arg Phe Asp Gln Arg Ser Lys Gln Met Gln
 65 70 75 80

Asn Leu Glu Asn Tyr Arg Val Val Glu Phe Met Ser Lys Pro Asn Thr
 85 90 95

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Leu Leu Leu Pro His His Ala Asp Ala Asp Phe Leu Leu Val Val Leu
100 105 110

Asn Gly Arg Ala Val Leu Thr Leu Val Asn Pro Asp Gly Arg Asp Ser
115 120 125

Asn Ile Leu Glu Gln Gly His Ala Gln Lys Ile Pro Ala Gly Thr Thr
130 135 140

Phe Phe Leu Val Asn Pro Asp Asp Asn Glu Asn Leu Arg Ile Ile Lys
145 150 155 160

Leu Ala Val Pro Val Asn Asn Pro His Arg Phe Gln Asp Phe Phe Leu
165 170 175

Ser Ser Thr Glu Ala Gln Gln Ser Tyr Leu Gln Gly Phe Ser Lys Asn
180 185 190

Ile Leu Glu Ala Ser Phe Asp Ser Asp Ile Lys Glu Ile Ser Arg Val
195 200 205

Leu Phe Gly Glu Glu Gly Gln Gln Gln Gln Gln Gly Gln Glu Ser Gln
210 215 220

Gln Glu Gly Val Ile Val Glu Leu Lys Arg Glu Gln Ile Arg Glu Leu
225 230 235 240

Thr Lys His Ala Lys Ser Ser Ser Lys Lys Ser Leu Ser Ser Glu Asp
245 250 255

Gln Pro Phe Asn Leu Arg Asn Gln Lys Pro Ile Tyr Ser Asn Lys Phe
260 265 270

Gly Glu Phe Tyr Glu Ile Thr Pro Lys Lys Asn Pro Gln Leu Lys Asp
275 280 285

Leu Asp Val Phe Ile Ser Ser Val Asp Met Lys Glu Gly Ser Leu Leu
290 295 300

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Leu Pro His Tyr Asn Ser Lys Ala Ile Val Ile Leu Val Ile Asn Glu
305 310 315 320

Gly Glu Ala Asn Ile Glu Leu Val Gly Leu Arg Glu Glu Gln Gln Gln
325 330 335

Gln Gln Gln Gln Asp Glu Arg Leu Glu Val Gln Arg Tyr Arg Ala Glu
340 345 350

Val Ser Glu Asp Asp Val Phe Val Ile Pro Ala Ala Tyr Pro Val Ala
355 360 365

Ile Asn Ala Thr Ser Asn Leu Asn Phe Phe Ala Phe Gly Ile Asn Ala
370 375 380

Glu Asn Asn Gln Arg Asn Phe Leu Ala Gly Glu Lys Asp Asn Val Ile
385 390 395 400

Ser Glu Ile Pro Thr Glu Val Leu Asp Leu Ala Phe Pro Ala Pro Gly
405 410 415

Glu Lys Val Glu Lys Leu Val Gln Lys Gln Ser Thr Ser His Phe Val
420 425 430

Asp Ala Gln Pro Glu Glu Gln Gln Arg Glu Glu Gly Pro Lys Gly Arg
435 440 445

Lys Gly His Phe Val Tyr
450

<210> 4

<211> 454

<212> PRT

<213> Vigna radiata

<400> 4

Met Val Arg Ala Arg Ile Pro Leu Leu Leu Leu Leu Gly Ile Leu Phe
1 5 10 15

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Leu Ala Ser Leu Ser Val Ser Phe Gly Ile Val His Arg Glu Asn Ile
20 25 30

Asp Gly Ala Glu Val Ser Val Ser Arg Gly Lys Asn Asn Pro Phe Tyr
35 40 45

Phe Asn Ser Asp Arg Trp Phe His Thr Leu Phe Arg Asn Gln Phe Gly
50 55 60

His Leu Arg Val Leu Gln Arg Phe Asp Gln Arg Ser Lys Gln Met Gln
65 70 75 80

Asn Leu Glu Asn Tyr Arg Val Val Glu Leu Met Ser Lys Pro Asn Thr
85 90 95

Leu Leu Leu Pro His His Ala Asp Ala Asp Phe Leu Leu Val Val Leu
100 105 110

Asn Gly Arg Ala Val Leu Thr Leu Val Asn Pro Asp Gly Arg Asp Ser
115 120 125

Asn Ile Leu Glu Gln Gly His Ala Gln Lys Ile Pro Ala Gly Thr Thr
130 135 140

Phe Phe Leu Val Asn Pro Asp Asp Asn Glu Asn Leu Arg Ile Ile Lys
145 150 155 160

Leu Ala Val Pro Val Asn Asn Pro His Arg Phe Gln Asp Phe Phe Leu
165 170 175

Ser Ser Thr Glu Ala Gln Gln Ser Tyr Leu Gln Gly Phe Ser Lys Asn
180 185 190

Ile Leu Glu Ala Ser Phe Asp Ser Asp Ile Lys Glu Ile Ser Arg Val
195 200 205

Leu Phe Gly Glu Glu Gly Gln Gln Gln Gln Gln Gly Gln Glu Ser Gln
210 215 220

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Gln Glu Gly Val Ile Val Glu Leu Lys Arg Glu Gln Ile Arg Glu Leu
225 230 235 240

Thr Lys His Ala Lys Ser Ser Ser Lys Lys Ser Leu Ser Ser Glu Asp
245 250 255

Gln Pro Phe Asn Leu Arg Asn Gln Lys Pro Ile Tyr Ser Asn Lys Leu
260 265 270

Gly Arg Trp Phe Glu Ile Thr Pro Glu Lys Asn Pro Gln Leu Arg Asp
275 280 285

Leu Asp Met Phe Ile Arg Ser Val Asp Met Lys Glu Gly Ser Leu Leu
290 295 300

Leu Pro His Tyr Asn Ser Lys Ala Ile Val Ile Leu Val Ile Asn Glu
305 310 315 320

Gly Lys Ala Asn Ile Glu Leu Val Gly Gln Arg Glu Gln Gln Lys Gln
325 330 335

Gln Glu Glu Gln Glu Glu Ser Trp Glu Val Gln Arg Tyr Arg Ala Glu
340 345 350

Leu Ser Glu Asp Asp Val Phe Ile Ile Pro Ala Thr Tyr Pro Val Ala
355 360 365

Ile Asn Ala Thr Ser Asn Leu Asn Phe Phe Ala Phe Gly Ile Asn Ala
370 375 380

Glu Asn Asn Gln Arg Asn Phe Leu Ala Gly Glu Lys Asp Asn Val Ile
385 390 395 400

Ser Glu Ile Pro Thr Glu Val Leu Asp Val Thr Phe Pro Ala Ser Gly
405 410 415

Glu Lys Val Lys Lys Leu Ile Lys Lys Gln Ser Glu Ser Gln Phe Val
420 425 430

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Asp Ala Gln Pro Glu Gln Gln Glu Arg Glu Glu Ala Arg Lys Gly Gly
 435 440 445

Lys Gly Pro Phe Val Tyr
 450

<210> 5
 <211> 453
 <212> PRT
 <213> Vigna radiata

<400> 5

Met Val Arg Ala Arg Val Gln Leu Leu Leu Gly Ile Leu Phe Leu Ala
 1 5 10 15

Ser Leu Ser Val Ser Phe Gly Ile Val His Arg Glu His Gln Glu Ser
 20 25 30

Gln Glu Glu Ser Asp Ser Arg Gly Gln Asn Asn Pro Phe Tyr Phe Asn
 35 40 45

Ser Asp Arg Arg Phe His Thr Leu Phe Lys Asn Gln Tyr Gly His Leu
 50 55 60

Arg Val Ile His Arg Phe Asp Gln Arg Ser Lys Gln Ile Gln Asn Leu
 65 70 75 80

Glu Asn Tyr Arg Val Val Glu Phe Lys Ser Lys Pro Asn Thr Leu Leu
 85 90 95

Leu Pro His His Ala Asp Ala Asp Phe Leu Leu Val Val Leu Asn Gly
 100 105 110

Arg Ala Ile Leu Thr Leu Val Asn Pro Asp Gly Arg Asp Ser Tyr Ile
 115 120 125

Leu Glu Gln Gly His Ala Gln Lys Ile Pro Ala Gly Thr Thr Phe Phe
 130 135 140

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Leu Val Asn Pro Asn Asp Asn Asp Asn Leu Arg Ile Ile Lys Leu Ala
 145 150 155 160

Ile Pro Val Asn Asn Pro His Arg Phe Gln Asn Phe Phe Leu Ser Ser
 165 170 175

Thr Glu Ala Gln Gln Ser Tyr Leu Arg Gly Phe Ser Lys Asn Ile Leu
 180 185 190

Glu Ala Ser Phe Asp Ser Asp Phe Lys Glu Ile Asp Arg Val Leu Phe
 195 200 205

Gly Glu Glu Arg Gln Gln Gln His Gly Glu Glu Ser Gln Glu Glu Gly
 210 215 220

Val Ile Val Glu Leu Lys Arg Glu Gln Ile Arg Glu Leu Ile Lys His
 225 230 235 240

Ala Lys Ser Ser Ser Arg Lys Glu Leu Ser Ser Gln Asp Glu Pro Phe
 245 250 255

Asn Leu Arg Asn Ser Asn Pro Ile Tyr Ser Asn Lys Phe Gly Arg Trp
 260 265 270

Tyr Glu Ile Thr Pro Glu Lys Asn Pro Gln Leu Lys Asp Leu Asp Val
 275 280 285

Phe Ile Ser Ser Val Asp Met Lys Glu Gly Gly Leu Leu Leu Pro His
 290 295 300

Tyr Asn Ser Lys Ala Ile Val Ile Leu Val Ile Asn Glu Gly Glu Ala
 305 310 315 320

Lys Ile Glu Leu Val Gly Pro Ser Asp Gln Gln Gln Gln Asp Glu Ser
 325 330 335

Leu Glu Val Gln Arg Tyr Arg Ala Glu Leu Ser Glu Asp Asp Val Phe
 340 345 350

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Val Ile Pro Ala Ala Tyr Pro Val Ala Ile Asn Ala Thr Ser Asn Leu
355 360 365

Asn Phe Phe Ala Phe Gly Ile Asn Ala Glu Asn Asn Gln Arg Asn Phe
370 375 380

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

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

Lys Lys Gln Ser Glu Ser His Phe Val Asp Ala Gln Pro Glu Gln Gln
420 425 430

Gln Arg Glu Glu Gly His Lys Gly Arg Lys Gly Ser Leu Ser Ser Ile
435 440 445

Leu Gly Ser Leu Tyr
450

<210> 6
<211> 379
<212> PRT
<213> Vigna radiata var. radiata

<220>
<221> misc_feature
<222> (56)..(57)
<223> Xaa can be any naturally occurring amino acid

<400> 6

Met Met Arg Ala Arg Ile Pro Leu Leu Leu Leu Gly Ile Leu Phe
1 5 10 15

Leu Ala Ser Leu Ser Val Ser Phe Gly Ile Val His Arg Glu Asn Ile
20 25 30

Asp Gly Ala Glu Val Ser Val Ser Arg Gly Lys Asn Asn Pro Phe Tyr
35 40 45

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Phe Asn Ser Asp Arg Trp Phe Xaa Xaa Leu Phe Arg Asn Gln Phe Gly
50 55 60

His Leu Arg Val Leu Gln Arg Phe Asp Gln Arg Ser Lys Gln Met Gln
65 70 75 80

Asn Leu Glu Asn Tyr Arg Val Val Glu Phe Met Ser Lys Pro Asn Thr
85 90 95

Leu Leu Leu Pro His His Ala Asp Ala Asp Phe Leu Leu Val Val Leu
100 105 110

Asn Gly Arg Ala Val Leu Thr Leu Val Asn Pro Asp Gly Arg Asp Ser
115 120 125

Asn Ile Leu Glu Gln Gly His Ala Gln Lys Ile Pro Ala Gly Thr Thr
130 135 140

Phe Phe Leu Val Asn Pro Asp Asp Asn Glu Asn Leu Arg Ile Ile Lys
145 150 155 160

Leu Ala Val Pro Val Asn Asn Pro His Arg Phe Gln Asp Phe Phe Leu
165 170 175

Ser Ser Thr Glu Ala Gln Gln Ser Tyr Leu Gln Gly Phe Ser Lys Asn
180 185 190

Ile Leu Glu Ala Ser Phe Asp Ser Asp Ile Lys Glu Ile Asn Arg Val
195 200 205

Leu Phe Gly Glu Asp Ser Val Asp Met Lys Glu Gly Ser Leu Leu Leu
210 215 220

Pro His Tyr Asn Ser Lys Ala Ile Val Ile Leu Val Ile Asn Glu Gly
225 230 235 240

Glu Ala Asn Ile Glu Leu Val Gly Leu Arg Glu Glu Gln Gln Gln Gln
245 250 255

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Gln Gln Gln Asp Glu Arg Leu Glu Val Gln Arg Tyr Arg Ala Glu Val
260 265 270

Ser Glu Asp Asp Val Phe Val Ile Pro Ala Ala Tyr Pro Val Ala Ile
275 280 285

Asn Ala Thr Ser Asn Leu Asn Phe Phe Ala Phe Gly Ile Asn Ala Glu
290 295 300

Asn Asn Gln Arg Asn Phe Leu Ala Gly Glu Lys Asp Asn Val Ile Ser
305 310 315 320

Glu Ile Pro Thr Glu Val Leu Asp Leu Ala Phe Pro Ala Pro Gly Glu
325 330 335

Lys Val Glu Lys Leu Ile Glu Lys Gln Ser Thr Ser His Phe Val Asp
340 345 350

Ala Gln Pro Glu Glu Gln Gln Lys Glu Glu Asp Arg Asn Gly Lys Lys
355 360 365

Gly Pro Leu Ser Ser Ile Leu Asp Thr Leu Tyr
370 375

<210> 7
<211> 431
<212> PRT
<213> Vigna radiata var. radiata

<220>
<221> misc_feature
<222> (56)..(57)
<223> Xaa can be any naturally occurring amino acid

<400> 7

Met Val Arg Ala Arg Ile Pro Leu Val Leu Leu Leu Gly Ile Leu Phe
1 5 10 15

Leu Ala Ser Leu Ser Val Ser Phe Gly Ile Val His Arg Glu Asn Ile
20 25 30

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Asp Gly Ala Glu Val Ser Val Ser Arg Gly Lys Asn Asn Pro Phe Tyr
35 40 45

Phe Asn Ser Asp Arg Trp Phe Xaa Xaa Leu Phe Arg Asn Gln Phe Gly
50 55 60

His Leu Arg Val Leu Gln Arg Phe Asp Gln Arg Ser Lys Gln Met Gln
65 70 75 80

Asn Leu Glu Asn Tyr Arg Val Val Glu Phe Met Ser Lys Pro Asn Thr
85 90 95

Leu Leu Leu Pro His His Ala Asp Ala Asp Phe Leu Leu Val Val Leu
100 105 110

Asn Gly Arg Ala Val Leu Thr Leu Val Asn Pro Asp Gly Arg Asp Ser
115 120 125

Asn Ile Leu Glu Gln Gly His Ala Gln Lys Ile Pro Ala Gly Thr Thr
130 135 140

Phe Phe Leu Val Asn Pro Asp Asp Asn Glu Asn Leu Arg Ile Ile Lys
145 150 155 160

Leu Ala Val Pro Val Asn Asn Pro His Arg Phe Gln Asp Phe Phe Leu
165 170 175

Ser Ser Thr Glu Ala Gln Gln Ser Tyr Leu Gln Gly Phe Ser Lys Asn
180 185 190

Ile Leu Glu Ala Ser Phe Asp Ser Asp Ile Lys Glu Ile Ser Arg Ile
195 200 205

Leu Phe Gly Glu Glu Gly Gln Gln Gln Gln Gln Gly Gln Glu Ser Gln
210 215 220

Gln Glu Gly Val Ile Val Glu Leu Lys Arg Glu Gln Ile Arg Lys Leu
225 230 235 240

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Thr Lys His Ala Lys Ser Ser Ser Lys Lys Ser Leu Ser Ser Glu Asp
245 250 255

Glu Pro Phe Asn Leu Arg Asn Gln Lys Pro Ile Tyr Ser Asn Lys Leu
260 265 270

Gly Arg Trp Phe Glu Ile Thr Pro Glu Arg Asn Pro Gln Leu Arg Asp
275 280 285

Leu Asp Met Phe Ile Arg Ser Val Asp Ile Asn Glu Gly Ser Leu Leu
290 295 300

Leu Pro His Tyr Asn Ser Arg Ala Thr Ala Ile Leu Val Ile Asn Glu
305 310 315 320

Gly Asn Ala Asn Ile Glu Leu Val Gly Gln Arg Glu Gln Glu Glu Ser
325 330 335

Leu Glu Val Gln Arg Tyr Ile Ala Glu Leu Ser Glu Gly Asp Val Phe
340 345 350

Ile Ile Pro Ala Thr Tyr Pro Val Val Ile Asn Ala Thr Ser Asn Leu
355 360 365

Asn Phe Phe Ala Phe Gly Ile Asn Ala Glu Asn Asn Gln Arg Asn Phe
370 375 380

Leu Ala Gly Glu Lys Asp Asn Val Ile Ser Glu Ile Pro Thr Glu Val
385 390 395 400

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

Lys Lys Gln Ser Glu Ser Gln Phe Val Asp Ala Gln Pro Glu Gln
420 425 430

<210> 8
<211> 431

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<212> PRT

<213> *Vigna radiata* var. *radiata*

<400> 8

Met Met Arg Ala Arg Val Pro Leu Leu Leu Leu Leu Gly Ile Leu Phe
 1 5 10 15

Leu Ala Ser Leu Ser Val Thr Phe Gly Ile Val His Arg Glu His Gln
 20 25 30

Gln Ser Gln Glu Glu Ser Asp Ser Arg Gly Arg Asn Asn Pro Phe Tyr
 35 40 45

Phe Asn Ser Asp Arg Phe His Thr Leu Tyr Thr Asn Glu Tyr Gly His
 50 55 60

Leu Arg Val Leu Gln Arg Phe Asp Gln Arg Ser Lys Gln Ile Gln Asn
 65 70 75 80

Leu Glu Asn Tyr Arg Leu Val Glu Phe Lys Ser Lys Pro Asn Thr Leu
 85 90 95

Leu Leu Pro His His Ala Asp Ala Asp Phe Leu Leu Val Val Leu Asn
 100 105 110

Gly Arg Ala Val Leu Thr Leu Val Asn Ala Asp Gly Arg Asp Ser Tyr
 115 120 125

Ile Leu Glu Gln Gly His Ala Gln Arg Ile Pro Ala Gly Thr Ile Phe
 130 135 140

Phe Val Val Asn Pro Asn Asp Asn Glu Asn Leu Arg Ile Ile Lys Met
 145 150 155 160

Ala Val Pro Val Asn Asn Pro His Arg Phe Gln Asp Phe Phe Leu Ser
 165 170 175

Ser Thr Glu Ala Gln Gln Ser Tyr Leu Gln Gly Phe Ser Lys Asn Val
 180 185 190

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Leu Glu Ala Ser Phe Asp Ser Glu Phe Lys Glu Ile Asn Arg Val Leu
195 200 205

Phe Gly Gly Glu Gly Gln Gln Gln Gln Gly Gln Glu Ser Gln Gln Glu
210 215 220

Gly Val Ile Val Glu Leu Glu Arg Glu Gln Ile Arg Glu Leu Ile Lys
225 230 235 240

His Ala Lys Ser Ser Ser Arg Arg Ala Leu Ser Ser Gln Asp Glu Pro
245 250 255

Ile Asn Leu Arg Asn Arg Lys Pro Ile Tyr Ser Asn Lys Phe Gly Arg
260 265 270

Trp Tyr Glu Ile Thr Pro Glu Lys Asn Pro Gln Leu Arg Asp Met Asp
275 280 285

Met Phe Ile Ser Ser Val Asn Met Lys Glu Gly Gly Leu Leu Leu Pro
290 295 300

His Tyr Asn Ser Lys Ala Ile Val Ile Leu Val Ile Asn Lys Gly Glu
305 310 315 320

Ala Asn Leu Glu Leu Val Gly Gln Arg Glu Gln Glu Gln Glu Glu Ser
325 330 335

Trp Glu Val Gln Arg Tyr Arg Ala Glu Leu Ser Glu Asp Asp Val Phe
340 345 350

Ile Ile Pro Ala Thr Tyr Pro Val Ala Ile Asn Ala Thr Ser Asn Leu
355 360 365

Asn Phe Phe Ala Phe Gly Ile Asn Ala Glu Asn Asn Gln Arg Asn Phe
370 375 380

Leu Ala Gly Glu Arg Asp Asn Val Ile Ser Glu Ile Pro Thr Glu Val
385 390 395 400

116377_00018_ST25

Leu Asp Val Thr Phe Pro Ala Ser Gly Glu Lys Val Val Lys Leu Val
405 410 415

Lys Lys Gln Ser Glu Ser Tyr Phe Val Asp Ala Gln Ser Glu Gln
420 425 430

<210> 9

<211> 338

<212> PRT

<213> Vigna radiata var. radiata

<400> 9

Met Leu Arg Ala Arg Val Gln Phe Leu Leu Gly Ile Leu Leu Leu Ala
1 5 10 15

Ser Leu Ser Ile Ser Phe Gly Ile Leu His Trp Glu His Gln Glu Ser
20 25 30

Gln Glu Glu Ser Asp Ser Arg Gly Gln Asn Asn Pro Phe Tyr Phe Ser
35 40 45

Ser His Lys Arg Phe His Thr Leu Phe Lys Asn Gln Tyr Gly His Leu
50 55 60

Arg Val Leu His Arg Phe Asp Gln Arg Phe Gly Gln Ile Leu Asn Leu
65 70 75 80

Glu Asn Tyr Arg Val Val Gln Phe Lys Ser Lys Pro Asn Thr Leu Leu
85 90 95

Leu Pro His His Ala Asp Ala Asp Phe Leu Leu Val Val Leu Asn Gly
100 105 110

Arg Ala Ile Leu Thr Leu Val Asn Pro Asp Gly Arg Asp Ser Tyr Ile
115 120 125

Leu Glu Gln Gly His Ala Gln Lys Ile Pro Ala Gly Thr Thr Phe Phe
130 135 140

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Leu Val Asn Pro Asn Asp Asn Asp Asn Leu Arg Ile Ile Lys Leu Ala
145 150 155 160

Ile Pro Val Asn Asn Pro His Arg Phe Gln Asn Phe Phe Leu Ser Ser
165 170 175

Thr Glu Ala Gln Gln Ser Tyr Leu Arg Gly Phe Ser Lys Asn Ile Leu
180 185 190

Glu Ala Ser Phe Asp Ser Asp Phe Lys Glu Ile Asp Arg Val Leu Phe
195 200 205

Gly Glu Glu Arg Gln Gln Gln His Gly Glu Glu Ser Gln Glu Glu Gly
210 215 220

Val Ile Val Glu Leu Lys Arg Glu Gln Ile Arg Glu Leu Ile Lys His
225 230 235 240

Ala Lys Ser Ser Ser Arg Lys Glu Leu Ser Ser Gln Asp Glu Pro Phe
245 250 255

Asn Leu Arg Asn Asn Asn Pro Ile Tyr Ser Asn Lys Phe Gly Arg Trp
260 265 270

Tyr Glu Ile Thr Pro Glu Arg Asn Pro Gln Leu Lys Asp Leu Asp Val
275 280 285

Phe Ile Ser Ser Val Asp Met Glu Glu Pro Glu Ile Phe His Phe Phe
290 295 300

Ser Ser Leu Met Leu Leu Pro Ser Val Leu Phe Pro Leu Thr Leu Ser
305 310 315 320

Asp Arg Ile Tyr Phe Cys Ala Gly Phe Leu Ala Leu Glu His Asp Phe
325 330 335

Cys Ala

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<210> 10
 <211> 246
 <212> PRT
 <213> Vigna radiata var. radiata

<400> 10

Phe Gly Glu Glu Gly Gln Gln Gln Gln Gln Gly Gln Glu Ser Gln Gln
 1 5 10 15

Glu Gly Val Ile Val Glu Leu Lys Arg Glu Gln Ile Arg Glu Leu Ile
 20 25 30

Arg His Ala Lys Ser Asn Ser Lys Thr Leu Ser Ser Gln Asn Glu Pro
 35 40 45

Phe Asn Leu Arg Asn Gln Lys Pro Val Tyr Ser Asn Arg Phe Gly Arg
 50 55 60

Met His Glu Ile Thr Pro Glu Lys Asn Pro Gln Leu Arg Asp Leu Asp
 65 70 75 80

Val Phe Leu Ser Tyr Val Asp Met Lys Glu Gly Gly Leu Leu Met Pro
 85 90 95

Asn Tyr Asn Ser Lys Ala Ile Val Ile Leu Val Leu Asn Lys Gly Glu
 100 105 110

Ala Asn Ile Glu Leu Val Gly Leu Lys Glu Pro Gln Gln Gln Gln
 115 120 125

Glu Glu Ser Trp Asp Val Gln Arg Tyr Ser Ala Glu Leu Thr Glu Asp
 130 135 140

Asp Val Phe Val Ile Pro Ala Ala Tyr Pro Val Ala Ile Asn Ala Thr
 145 150 155 160

Ser Asn Met Asn Phe Leu Ala Phe Gly Ile Asn Ala Glu Asn Asn Gln
 165 170 175

Arg Asn Phe Leu Ala Gly Glu Lys Asp Asn Val Ile Ser Glu Ile Pro

180

185

190

Ser Gln Val Leu Glu Val Ala Phe Pro Gly Ser Gly Glu Lys Val Val
 195 200 205

Lys Leu Ile Asn Lys Gln Ser Leu Ser Tyr Phe Val Asp Ala Gln Ser
 210 215 220

Gln Gln Lys Glu Glu Gln Ser Lys Gly Arg Lys Gly Pro Leu Ser Ser
 225 230 235 240

Ile Leu Asp Thr Leu Tyr
 245

<210> 11
 <211> 613
 <212> PRT
 <213> Vigna radiata var. radiata

<400> 11

Met Ala Arg Pro Phe Thr Leu Ser Leu Leu Ser Leu Cys Val Leu Leu
 1 5 10 15

Ser Ala Arg Ser Cys Phe Gly Ser Ser Ser Ser Thr Asn Arg Phe Asn
 20 25 30

Arg Cys Gln Phe Asn Ser Leu Asn Ala Leu Lys Pro Asp His Arg Val
 35 40 45

Glu Thr Asp Gly Gly Leu Val Glu Thr Trp Ser Ser Arg His Pro Glu
 50 55 60

Leu Glu Cys Ala Gly Val Thr Ala Thr Arg Arg Thr Leu Tyr Arg Asn
 65 70 75 80

Gly Leu Gln Met Pro Ser Tyr Ser Pro Tyr Ser Gln Met Ile Ile Val
 85 90 95

Ile Gln Gly Lys Gly Ala Phe Gly Leu Ala Leu Ser Gly Cys Ala Glu
 100 105 110

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Thr Tyr Glu Glu Pro Ala Lys Glu Ser Ser Ser Ser Ser His Lys Pro
115 120 125

Ser Asp Ser His Gln Lys Ile His Gln Ser Gly Pro Gly His Val Ile
130 135 140

Leu Ile Pro Arg Gly Val Pro Phe Trp Ile Phe Asn Thr Gly Asp Glu
145 150 155 160

Pro Leu Ile Thr Val Thr Leu Leu Asp Thr Val Ser Glu Asp Asn Gln
165 170 175

Leu Asp Gln Ser Pro Arg Glu Phe Tyr Leu Ala Gly Asn Pro Asp Ile
180 185 190

Glu His Pro Glu Ala Met Lys Glu Lys Gln Gln Gln Gln Ala Glu Glu
195 200 205

Glu Gly Gly Asn Val Leu Ser Gly Phe Gly Lys Arg Phe Leu Ala Arg
210 215 220

Ala Leu Asn Ile Asp Gln Asp Ile Ala Asn Lys Leu Ile Ser Pro Asp
225 230 235 240

Asp Glu Met Lys Gln Ile Val Lys Leu Lys Glu Gly Leu Ser Val Ile
245 250 255

Ser Pro Lys Trp Gln Gly Gln Gln Glu Asp Glu Asp Glu Asp Asp Asp
260 265 270

Asp Glu Asp Glu Asp Glu Asp Glu Ser Val Ser Arg Pro Ser Arg Arg
275 280 285

Pro Ser His Gly Lys Arg Val Arg Lys Glu Glu Glu Lys Glu Val Glu
290 295 300

Pro Tyr Gly Lys His Val His Lys Glu Val Glu Lys Glu Val Glu Pro
305 310 315 320

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Leu Pro Pro Arg Lys His Val His Lys Glu Glu Glu Lys Glu Ile Glu
325 330 335

Pro Leu Pro Pro Arg Arg Ser Arg His His His Asp Glu Asp Glu Asp
340 345 350

Glu Asp Glu Asp Glu Glu Glu Lys Pro Arg Arg Thr Arg Gly Pro Thr
355 360 365

Pro Ser Pro Lys Gly Glu Gly His Arg Gly Val Glu Val Glu Glu Asp
370 375 380

Glu Ser Asp Glu Ser Val Arg His Lys Thr Arg His Glu Lys Ser Trp
385 390 395 400

Lys Glu His Arg Pro Ala Gln Glu Asp Val Glu Arg Gly Glu Ala His
405 410 415

Glu Glu Trp Glu Thr Arg Pro Ser Lys Asp Lys Arg His Gly Ser Asn
420 425 430

Gly Leu Glu Glu Thr Ile Cys Ser Ser Lys Leu Gln Phe Asn Ile Ala
435 440 445

Arg Pro Lys Ser Ala Asp Phe Tyr Asn Pro Lys Ala Gly Arg Ile Lys
450 455 460

Asn Leu Asn Ser Gln Ser Leu Pro Ala Leu Arg Asn Phe Gly Leu Ser
465 470 475 480

Ala Gln Tyr Val Val Leu Tyr Lys Asn Gly Ile Tyr Ser Pro His Trp
485 490 495

Asn Met Asp Ala Asn Ser Val Ile Tyr Val Ile Arg Gly Gln Gly Gln
500 505 510

Val Arg Val Val Asn Asn Glu Gly Ile Met Val Phe Asp Asp Glu Leu
515 520 525

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Ser Lys Gly Gln Leu Leu Val Val Pro Gln Asn Phe Met Val Ala Glu
530 535 540

Glu Ala Gly Asp Gln Gly Phe Glu Tyr Val Val Phe Lys Thr Asn Asp
545 550 555 560

Asn Ala Val Thr Ser Tyr Leu Lys Glu Thr Phe Arg Ala Phe Pro Ala
565 570 575

Glu Val Leu Ala Asn Ile Tyr Lys Leu Lys Gln Ser Gln Val Tyr Asp
580 585 590

Leu Lys Tyr Asn Gly Asn Trp Gly Pro Leu Ala Asn Pro Val Gln Ser
595 600 605

Gln Asp Gln Ser Ser
610

<210> 12
<211> 532
<212> PRT
<213> Vigna radiata var. radiata

<400> 12

Met Met Arg Ser Arg Phe Pro Leu Leu Leu Leu Gly Val Val Phe
1 5 10 15

Leu Ala Ser Val Ser Val Ser Phe Gly Ile Ala Tyr Trp Glu Lys Glu
20 25 30

Asn Leu Ser His Asn Lys Cys Leu Arg Ser Cys Ser Ser Glu Lys Ser
35 40 45

Thr Tyr Arg Ile Gln Ala Cys His Ala Arg Cys Asn Leu Leu Lys Glu
50 55 60

Asp Lys Glu His Gln Glu Gly Glu His Ser Leu Pro Thr His His Glu
65 70 75 80

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Glu Glu Asp Glu Asp Glu Ser Arg Gln Pro Arg Pro Phe Pro Phe Pro
85 90 95

Phe Pro Ile Pro Leu Arg Pro Arg Glu Arg Gln Ser Glu Gly Ser Glu
100 105 110

Ser Ser Arg Lys Gln Asn Asn Pro Phe His Phe Ser Ser Asn Arg Phe
115 120 125

His Ser Leu Phe Lys Asn Pro Asn Gly His Ile Arg Leu Leu Gln Arg
130 135 140

Phe Asp Gln Gln Ser Lys Gln Leu Gln Asn Leu Gln Asp Tyr Arg Leu
145 150 155 160

Leu Glu Val Gln Leu Arg Pro Arg Thr Leu Leu Leu Pro His His Val
165 170 175

Asp Ala Asp Tyr Ile Ile Ile Ile Leu Ser Gly Arg Ala Ile Leu Thr
180 185 190

Leu Gln Asn Pro Asp Asp Arg Asp Ser Tyr Asn Leu Gln Asn Gly Asp
195 200 205

Val Gln Asn Ile Pro Ala Gly Thr Thr Leu Tyr Leu Ile Asn Pro Asp
210 215 220

Asn Glu Glu Thr Leu Lys Val Met Val Leu Ala Arg Pro Ile Asn Asn
225 230 235 240

Pro Gly Arg Leu Glu Ser Phe Phe Leu Ser Ser Thr Glu Ala Gln Gln
245 250 255

Ser Tyr Leu Gln Gly Phe Ser Lys Lys Thr Leu Glu Ala Ser Phe Asp
260 265 270

Thr Gln Phe Lys Glu Ile Asn Arg Val Leu Phe Gly Glu Glu Gly Gln
275 280 285

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Gln Gln Asp Glu Glu Lys Gln Glu Gly Val Ile Val Lys Leu Ser Lys
290 295 300

Glu Gln Ile Arg Glu Leu Ser Lys His Ala Lys Ser Ser Ser Lys Lys
305 310 315 320

Thr Ile Ser Ser Lys Asp Lys Pro Phe Asn Leu Arg Ser Ser Ser Pro
325 330 335

Val Tyr Ser Asn Thr Leu Gly Lys Phe Tyr Glu Ile Thr Pro Glu Lys
340 345 350

Asn Pro Gln Leu Arg Asp Met Asp Val Phe Val Ser Phe Val Asn Met
355 360 365

Lys Glu Gly Ala Leu Leu Leu Pro His Tyr Asn Ser Lys Ser Ile Val
370 375 380

Ile Leu Val Val Asn Lys Gly Glu Ala Asn Ala Glu Leu Val Gly Glu
385 390 395 400

Arg Glu Gln Gln Gln Glu Glu Ser Gly Glu Val Gln Arg Tyr Arg Ala
405 410 415

Glu Leu Ser Glu Glu Asp Val Leu Val Ile Pro Ala Thr Tyr Pro Val
420 425 430

Ala Ile Asn Ala Thr Ser Asn Leu Asn Phe Phe Ala Phe Gly Ile Asn
435 440 445

Ala Glu Asn Asn Gln Arg Asn Phe Leu Ala Gly Glu Lys Asp Asn Val
450 455 460

Met Ser Asp Ile Pro Arg Pro Val Leu Glu Val Ala Phe Pro Gly Ser
465 470 475 480

Gly Glu Glu Thr Glu Lys Leu Ile Lys Lys Gln Thr Glu Ser Tyr Phe
485 490 495

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Val Asp Ala Gln Pro Gln Gln Lys Gln Ser Gln Glu Lys Glu Lys Glu
500 505 510

Glu Lys Glu Glu Gly Ser Lys Gly Arg Asn Pro Leu Tyr Ser Ile Leu
515 520 525

Asn Ala Phe Tyr
530

<210> 13
<211> 155
<212> PRT
<213> Vigna radiata

<400> 13

Met Ala Val Phe Thr Phe Asp Asp Gln Ala Thr Ser Pro Val Ala Pro
1 5 10 15

Ala Thr Leu Tyr Asn Ala Leu Ala Lys Asp Ala Asp Asn Ile Ile Pro
20 25 30

Lys Ala Val Gly Ser Phe Gln Ser Val Glu Ile Val Glu Gly Asn Gly
35 40 45

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

Lys Phe Val Leu His Lys Ile Glu Ser Val Asp Glu Ala Asn Leu Gly
65 70 75 80

Tyr Ser Tyr Ser Ile Val Gly Gly Val Ala Leu Pro Asp Thr Ala Glu
85 90 95

Lys Ile Thr Ile Asp Thr Lys Ile Ser Asp Gly Ala Asp Gly Gly Ser
100 105 110

Leu Ile Lys Leu Thr Ile Ser Tyr His Gly Lys Gly Asp Ala Pro Pro
115 120 125

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Asn Glu Asp Glu Leu Lys Ala Gly Lys Ala Lys Ser Asp Ala Leu Phe
130 135 140

Lys Ala Val Glu Ala Tyr Leu Leu Ala Asn Pro
145 150 155

<210> 14

<211> 297

<212> PRT

<213> Vigna radiata var. radiata

<400> 14

Met Ala Val Ser Ser Thr Asn Tyr Ser Phe Leu Ile Ala Val Phe Ala
1 5 10 15

Phe Val Thr Met Leu Leu Met Phe Pro Asn Lys Val Lys Ser Ala Gln
20 25 30

Ser Leu Ser Phe Ser Phe Ser Arg Phe Gly Pro Asp His Lys Asp Leu
35 40 45

Ile Phe Gln Gly Asp Ala Ile Ser Thr Asn Asn Val Leu Gln Leu Thr
50 55 60

Lys Leu Asp Ser Ala Gly Asn Pro Leu Ser Gly Ser Val Gly Arg Val
65 70 75 80

Leu Tyr Ser Ala Pro Leu His Leu Trp Glu Asn Ser Ala Val Val Ser
85 90 95

Ser Phe Glu Thr Ser Phe Thr Phe Gln Ile Ser Thr Pro Tyr Thr Ser
100 105 110

Pro Pro Ala Asp Gly Val Ala Phe Phe Leu Ala Pro Tyr Asp Thr Val
115 120 125

Ile Pro Ser Asn Ser Gly Gly Ser Leu Leu Gly Leu Phe Ser Asn Leu
130 135 140

Asn Ala Leu Arg Asn Ser Ser Thr Ser Gln Asn Gln Thr Ile Leu Asp

145 150 155 160

Pro Asn Glu Asn Ile Gly Asp Pro Ala Tyr Lys His Ile Gly Ile Asp
180 185 190

Val	Asn	Ser	Ile	Arg	Ser	Lys	Thr	Thr	Ala	Arg	Trp	Asn	Trp	Gln	Asn
		195					200					205			

Gly Lys Thr Ala Thr Ala His Ile Ser Tyr Asn Ser Ala Ser Lys Arg
210 215 220

Leu Thr Val Ser Thr Phe Tyr Pro Gly Ser Asn Pro Val Thr Leu Ser
225 230 235 240

Tyr Asp Val Glu Leu His Thr Val Leu Ser Glu Trp Val Arg Val Gly
245 250 255

Phe Ser Ala Ser Ser Gly Glu Gln Lys Glu Arg Asn Thr Ile Leu Ser
260 265 270

Trp Ser Phe Thr Ser Ser Leu Lys Asn Asn Glu Val Lys Asp Glu Lys
275 280 285

Gln Asp Met Phe Ile Lys Thr Val Val
290 295

<210>	15
<211>	246
<212>	PRT
<213>	Vigna radiata var. radiata

<400> 15

Met Arg Ala Ser Thr Ser Ser Ile Pro Ile Pro Ser Ser Ser Ser Arg
1 5 10 15

Phe Ser Ile Phe Phe Phe Leu Leu Phe Ala Leu Leu Ala Leu Arg Ser
20 25 30

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Ser Ser Ser Asp Cys Ser His Phe Gln His Arg Ala Pro Met Ala Thr
35 40 45

Val Gly Gly Val Arg Asp Ser Pro Val Ser Gln Asn Ser Leu Glu Thr
50 55 60

Glu Ser Leu Ala Arg Phe Ala Val Asp Glu His Asn Lys Lys Gln Asn
65 70 75 80

Ser Leu Leu Glu Phe Ala Arg Val Val Lys Ala Gln Glu Gln Val Val
85 90 95

Ala Gly Thr Leu His His Leu Thr Leu Glu Ala Ile Glu Ala Gly Glu
100 105 110

Lys Lys Leu Tyr Glu Ala Lys Val Trp Val Lys Pro Trp Leu Asn Ser
115 120 125

Lys Glu Leu Gln Glu Phe Lys Pro Ala Gly Val Ala Ser Pro Phe Thr
130 135 140

Ser Ala Asp Leu Gly Val Lys Lys Asp Gly His Lys Ser Gly Trp Gln
145 150 155 160

Ser Val Pro Thr His Asp Pro Gln Val Gln Asp Ala Ala Asn His Ala
165 170 175

Ile Arg Thr Ile Gln Gln Arg Ser Asn Ser Leu Val Pro Tyr Val Leu
180 185 190

His Glu Val Ala Asp Ala Lys Ala Glu Val Ile Asp Asp Phe Ala Lys
195 200 205

Phe Asn Leu Leu Leu Lys Val Lys Arg Gly Glu Lys Glu Glu Lys Phe
210 215 220

Lys Val Glu Val His Lys Asn Asn Glu Gly Ala Leu His Leu Asn Gln
225 230 235 240

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Met Glu Gln Asp His Ser
245