

Plant Food Proline-rich Proteins

CARROT PROLINE-RICH PROTEIN

Proline-rich 33kDa protein [Daucus carota]

1 MNLLLILGVA IFAA **PS**LAD **S** **HS**HPPIHKPP VY **PP**VHKPP **IHK**PPVY **SP** VHKPP **IHK**PP
 61 VY **PP**VHKPP **IHK**PPVY **PP** VHKPP **SEY**KP **PVEA**TNSV **E** **DH**YPIHKPPV **YK**PPVQKPAP
 121 **E**HKPPVHKPP **IHK**PPVHN **TP** **SV** **DD**HYPAH **PIHK**QPIHR **PP**VHKPPTEH **KPP**VHEPATE
 181 **HK**PS **PP**VYQPP **K** **E**KPV **PE**HK **PP**HL **PP**IVVR **PP** **PT**HKPNPP **YGH**HPGHPPV ENTGN

14 kDa proline-rich protein DC2.15

1 MG **SK**NS **SA**VA LFF **L**NILFF **ALV** **SS**TEK **CP** **DP**YKPKPKP **PK**PT **TP**YPS **AGK** **CP**RDALK
 61 LGV **CA**DVNLN **VHN**VVIG **SPP** **TL** **PCS**LLLEG LVNLEAAV **CL** **CT**AIKANILG KNLNLPIALS
 121 LVLNN **CG**KQV **PN**GFE **CT**

arabinogalactan protein [Daucus carota]

1 **MT**AL **SP**KPIG LLHLALLF **ST** **FV**FALGTATI **AQ**PP **TA**LAPA **PA**PHHHKPPGG HHHHHKHAP **T**
 61 **PA**PAPL **KPP** **TH**APAPAVK **PP**VKPPVQPV **KPP**VKAPS **HA** **PT**PLPARKLV AVQGVVY **CKP**
 121 **NY**TGVE **LL** **GAT** **PL**LGA **VV** **KLQ** **Q** **NN**T **KYP** **LV**VQGKT **DKN** **GYF** **SL**NA **PKT** **IT**YGVHK **CR**
 181 **VF**VV **SS**PEKK **CD**KP **NL**RYG **VK**GAILEK **ST** **KPP**V **ST** **K** **PA** **T**FEMF **SV**GP **PF** **A**FE **PS** **KK**PC
 241 **SH**

Extensin (hydroxyproline)

1 **MG**RIAR **GS** **KM** **SS**LIV **LL**VV **LV** **SL**NLASE **T** **TAK**Y **TY** **SS**PP **P**PEH **S**PPPE **H**S **SP**PPYHYE
 61 **S**PPPK **HS**PP **PP** **P**VYKYK **S** **PP**PMH **S**PP **P**YHFE **S**PP **K**HS **SP**PP **P**V **Y**KYK **S**PPPK
 121 **H**SP **AP**VHHYK **YK** **S**PPPT **P**V **Y**KYK **S**PPPK **H**SP **AP**EHHYK **YK** **S**PPPK **H**F **PA**PEHHYKYK
 181 **YK** **S**PPPT **P**V **Y**KYK **S**PPPT **P**VYKYK **S**PP **PK**HS **AP**VHH **YK**YK **S**PPPT **P**VYK **S**PPPE
 241 **H** **S**PPPT **P**VY **KYK** **S**PPPMH **S**PP **P**VYK **YK** **S**PPPMH **S** **PP**PPVY **S**PP **PK**HHY **SY** **SP**
 301 **PP**PHY

TOMATO PROLINE-RICH PROTEIN

Proline-rich protein [Solanum lycopersicum]

1 **MH**VLIAR **CP**YC **P**YPPS **PK**HP **KL**PPKVKPPS **TQ**PPHVKPPS **PK**HPKDP **PP**VKPPS **PK**QP
 61 **P**YVKPP **TP**PK **H**PPHVKPPS **PK**HPKHPPQK **PP**PPS **HH**GP **K**PPIVKPPHV **PR**PPVHPP
 121 **IV**SPS **PK**PK **PP**FT **PK**P **SP**IPPIV **SP** **P**IVY **PP** **PT** **PP**IVHPPV **P** **K**PPS **PT** **PP**IV
 181 **S**PPIVY **PP**IT **PT** **PP**VV **SP**PI **PT** **PP**IV **S**PP **FV** **PN**PPV **PP**IV **PP**VV **PP**IV **PP**IT
 241 **PC**PPPPPPA **II** **PS**PPA **Q**PT **CP** **ID**ALKLGA **CV**DV **LV**GLLIH **IG**IGG **SA**KQ **CC** **LL**GLLD
 301 **LDA**AI **CL** **CT** **IR**LKLLNINI **IL** **PI**ALQVLI **DD** **CG**KY **PP**KD **FK** **CP**ST

CAPSICUM PROLINE-RICH PROTEIN

Proline-rich protein Capsicum annuum (Bell pepper)

MVLKVDLQ **CC** **SC** **YK**KVKIL **CK** **FQ**IR **D**QI **Y**DEKGNKV **TI** **TV** **CC**NPEKL **RD**KL **CS**KG **GG**
VIK **SI**EIEP **PK**PKPEKPK **E**PEKPKQPEK **PK**EPEKPKQ **E**KPEKPEKPK **Q**PEKPEKPEK
PKAPEKPEK **E**KPEKPEKPK **E**APKPPVAP **PP**AP **SV**VP **V**QEY **PP**PPS **G** **Y** **CC** **GQ** **Q**YAGH
TGG **PC**YQWYG **RP** **VP**PP **CG**Y **NY**GY **SY**GG **P** **Y** **Y**NRG **YV** **S** **R** **CD**PYL **CS**DE **NA**T **GC** **SI**M

BETROOT, CHARD (BETA VULGARIS sp.) PROLINE-RICH PROTEIN

Chitinase 1 [Beta vulgaris subsp. vulgaris]. E.g. beetroot, chard

1 **MK**IK **SP**SFL **LGL** **CL**ALVL **LL**GEGVQ **GR** **Q** **Q** **NT** **DT**NL **SG** **CS** **SV**GR **PS**R **PT** **PP**RPPT **PR**
 61 **PP**PPRPPT **PR** **PP**PPRPPT **PR** **PP**PT **PR**PP **PR**PP **PR**PP **PP** **PR**PPPPR **PP** **PR**PPPP
 121 **PR**PPPP **P** **R**PPPS **SP** **P** **R**PPPPPP **SP** **P** **PS**PPS **PP** **PE**PP **P**PEPT **PP** **P** **PP**HL
 181 **T**DI **SE**EMFN **E**FLN **R**IQPR **CP** **GR**WFY **YQ** **AF**ITAAE **FP** **E**FGN **GN**DEI **R**KREIAAFFG
 241 **Q** **SH**ETS **GE**PT **AQ**HGPF **W**G **Y** **CF**IEEIGAG **PL** **S**QY **CA**PS **V** **EW** **PC** **IR**GRFY **YGR** **GP**VQL **TW**
 301 **NF**NYGKQVKH **LGL**DL **LF**NP **D** **IV**AH **DP**VIS **F** **E** **AI**WFW **MP** **E**GNK **PS** **HE**V **I** **T** **G**QW **PT** **PA**
 361 **DI**ARN **RL** **P**GY **GLI** **T** **N**IFNGA **LE** **G** **T** **H**GP **DN** **R**GEN **R**IQFYQ **RY** **CD**LLDV **SY** **GD**NLD **YR**Q
 421 **P**FDWGLK **L**KLQ **GARE** **SW** **SSS**

ASPARAGUS PROLINE-RICH PROTEIN

Proline-rich protein [Asparagus officinalis]

1 MDP**T**KL**S**IL LLL**L**PTL**S**PH**C**PP**T**I**P**H**P****T**K**P**I**D**PP**H**R**P**HP**P**K**G**P**I**V**H**PP**V**F
61 **R**PP**V**IV**K**PP**S**TV**P****C**PP**S**PL**T****P**SP**V****T****P****T****P****V****T****P****P**PP**A****T****C**PLD**A**L**K**L**G**A**C**V**D**LL**G**GL**V**H
121 IGL**G****D**P**V**V**N**Q**C**CP**L**IE**G**L**V**E I**E**AA**V****C****L****C****T**I**R**L**K**LL**N**I**N**L Y**L**PL**A**L**Q**LL**L** **T****C****G**K**T****P**PP**G****Y**
181 **T****C****I**

PROFILIN: HOMOLOGY PEANUT Ara h5, TOMATO & CAPSICUM

Ara h5: MSWQTYVDNHLL**C**EIEGDHLSSAAILGQDGGVWAQSSHF**PQFKPEEI**
common MSWQTYVD+ HL+**C**+IEG++L+SAAI+GQDG+VWAQS++ **F****PQFKPEEI**
tomato: MSWQTYVDDHLM**C**DIEGNHLTSAAIIGQDGSVWAQSANF**PQFKPEEI**
capsicumMSWQTYVDDHLM**C**EIEGN**R**LTSAAIIGQDGSVWAQSATF**PQFKPEEI**

Ara h5: TAIMNDFAE**EP**GS**L**A**PT**GLYLGGTKYMVIQXXXXXXXXXXXXXXXXXVTIE
Common TAIMNDFAE**EP**G+L**A****PT**GL+LGGTKYMVIQ +T++
tomato: TAIMNDFAE**EP**GT**L**A**PT**GLHLGGTKYMVIQGEAGAVI**R**GKKGAGGITVK
capsicumTAIMNDFAE**EP**GT**L**A**PT**GLYLGGTKYMVIQGEAGAVI**R**GKKG**P**GGITVK

Ara h5: KTNQALIIGIYD**K****P****M****T****P****G****Q****C**NMIVER**L**GDY**L**IDT**G**L
common KTNQALIIGIYD+**P****M****T****P****G****Q****C**NMIVER**L**GDY+I+++L
tomato: KTNQALIIGIYD**EP****M****T****P****G****Q****C**NMIVER**L**GDY**I**IEQ**L**
capsicum KTNQALIIGIYD**EP****M****T****P****G****Q****C**NMIVER**L**GDY**L**IEQ**S**L

Profilins are widespread in the plant kingdom and are largely conserved.

P proline **P** where ginger enzymes digest protein

R arginine

C cysteine which can cross link to another cysteine bringing rigidity

T threonine that can bind to carbohydrate

S serine that can bind to carbohydrate