



B

	1	10	20	30	40	50
C. reticulata	...MDRGAV	IEINGH	QNGCLEGL	CKDNN...YSSGD	ALN	WGVMAETL
C. clementina	...MDRGAV	IEINGH	QNGCLEGL	CKDNN...YSSGD	ALN	WGVMAETL
P. trifoliata	...MDRGAV	IEINGH	QNGCLEGL	CKNNN...YSSGD	ALN	WGVMAETL
L. chinensis	MEKVANGT	THQNGG	VSGLLKSL	CTSGNDH	HQKQD	PLN
J. curcas	...MATI	IINGH	QNGSLEGL	CIT.R...	...D	PLSWGVAE
R. communis	...MAA	ABNGS	KNDSLESF	CNTGR...	...D	PLSWGVAE
P. tomentosa	...MET	ITKNGY	QNGSSLE	CTQ.R...	...D	PLSWGVAE
H. cannabinus	...MET	ITQO...	QSSLESF	CRITKG...	...GGV	PLN
V. vinifera	...MD	AMNCH	SN.KVES	FCVS...	...D	PLN
D. carota	...MAY	TNGHH	ENGNGVD	LCMKKE...	...D	PLSWGVAE

	60	70	80	90	100	110
C. reticulata	YRKPV	VNLGG	ETLTV	AQVAATA	TAGDVNAQ	VKVELS
C. clementina	YRKPV	VNLGG	ETLTV	AQVAATA	TAGDVNAQ	VKVELS
P. trifoliata	YRKPV	VNLGG	ETLTV	AQVAATA	TAGDVNAQ	VKVELS
L. chinensis	FRRPV	VKFGG	ETLTI	SQVAATA	AN...EAG	VKVELS
J. curcas	YRKP	VKLG	GETLTV	AQVAATA	ASH..DAG	VKVELA
R. communis	YRKP	VKLG	GETLTV	AQVAATA	ASH..DCG	VKVELS
P. tomentosa	YRKP	VNLAG	QTLTIA	AQVASTAGH..	DASN	VKVELS
H. cannabinus	YRRP	VKLG	GETLTI	SQVAATA	TR...DLG	VKVELS
V. vinifera	YRKP	VRLG	GETLTI	SQVAATA	GR..EGD	VSVELS
D. carota	YRKP	VKLG	GETLTI	SQVAATA	SAR...DDSG	VKVELS

	120	130	140	150	160	170
C. reticulata	YGVTTG	FATSHRRT	KNGGALQ	KELIRYVFF	YIFGNGTES	.SHTLPHS
C. clementina	YGVTTG	FATSHRRT	KNGGALQ	KELIKFLNAGI	FGNGTKS	.SHTLPHS
P. trifoliata	YGVTTG	FATSHRRT	KNGGALQ	KELIRFLNAGI	FGNGTKS	.SHMLPHS
L. chinensis	YGVTTG	FATSHRRT	KQGAALQ	RELIRFLNAGV	FGNGTES	.CHTLPHS
J. curcas	YGVTTG	FATSHRRT	KQGAALQ	RELIRFLNAGI	FGNGTET	.CHTLPHS
R. communis	YGVTTG	FATSHRRT	KQGAALQ	KELIRFLNAGI	FGNGTKS	.CHTLPHS
P. tomentosa	YGVTTG	FATSHRRT	KQGAALQ	KELIRFLNAGI	FGNGTET	.CHTLPHS
H. cannabinus	YGVTTG	FATSHRRT	KQGAALQ	KELIRFLNAGI	FGNGTKS	.CHTLPHS
V. vinifera	YGVTTG	FATSHRRT	KQGAALQ	KELIRFLNAGI	FGNGTKS	.CHTLPHS
D. carota	YGVTTG	FATSHRRT	KQGAALQ	KELIRFLNAGI	FGSGA	EAGNNTLPHS

	180	190	200	210	220	230
C. reticulata	LLQGYSGIR	FEILDAITK	LNHSITPCL	PLRGTITASGDL	VPLSYIAGLL	TGRPNSKATG
C. clementina	LLQGYSGIR	FEILDAITK	LNHSITPCL	PLRGTITASGDL	VPLSYIAGLL	TGRPNSKATG
P. trifoliata	LLQGYSGIR	FEILDAITK	LNHSITPCL	PLRGTITASGDL	VPLSYIAGLL	TGRPNSKATG
L. chinensis	LLQGYSGIR	FEILDAITK	LNHNITPCL	PLRGTITASGDL	VPLSYIAGLL	TGRPNSKATG
J. curcas	LLQGYSGIR	FEILDAITK	LNHNITPCL	PLRGTITASGDL	VPLSYIAGLL	TGRPNSKAI
R. communis	LLQGYSGIR	FEILDAITK	LNHNITPCL	PLRGTITASGDL	VPLSYIAGLL	TGRPNSKAI
P. tomentosa	LLQGYSGIR	FEILDAITK	LNHNITPCL	PLRGTITASGDL	VPLSYIAGLL	TGRPNSKATG
H. cannabinus	LLQGYSGIR	FEILDAITK	LNHGITPCL	PLRGTITASGDL	VPLSYIAGLL	TGRPNSKAVG
V. vinifera	LLQGYSGIR	FEILDAITK	LNHNITPCL	PLRGTITASGDL	VPLSYIAGLL	TGRPNSKAVG
D. carota	LLQGYSGIR	FEILDAITK	LNHNITPCL	PLRGTITASGDL	VPLSYIAGLL	TGRPNSKAVG

	240	250	260	270	280	290
C. reticulata	PNGE	IIDAQ	EASRQAG	FG..FFELQPK	EGLALVNGTAVG	SGCLAS
C. clementina	PNGE	IIDAQ	EASRQAG	FG..FFELQPK	EGLALVNGTAVG	SGCLAS
P. trifoliata	PNGE	IIDAQ	EASRQAG	FG..FFELQPK	EGLALVNGTAVG	SGCLAS
L. chinensis	PNGE	TLDAK	EASRQAG	FG..FFELQPK	EGLALVNGTAVG	SGCLAS
J. curcas	PSGE	SLDAV	EAFRLAD	IDS	GFELQPK	EGLALVNGTAVG
R. communis	PNGE	MDALE	EAFRLAG	IES	GFELQPK	EGLALVNGTAVG
P. tomentosa	PNGE	VLD	DAV	EAFKAA	IDS	GFELQPK
H. cannabinus	PNGE	PLDAQ	EAFRLAG	IDS	GFVLPK	ESLALVNGTAVG
V. vinifera	PSGE	VVNAE	EAFKMA	IQS	GFELQPK	EGLALVNGTAVG
D. carota	PTGV	TLSP	EAFRLAG	VEG	GFELQPK	EGLALVNGTAVG

	300	310	320	330	340	350
C. reticulata	SAIFA	EVMOG	KPEF	TDHL	THLKHHP	GGQIEAAA
C. clementina	SAIFA	EVMOG	KPEF	TDHL	THLKHHP	GGQIEAAA
P. trifoliata	SAIFA	EVMOG	KPEF	TDHL	THLKHHP	GGQIEAAA
L. chinensis	SAIFA	EVMOG	KPEF	TDHL	THLKHHP	GGQIEAAA
J. curcas	SAIFA	EVMOG	KPEF	TDHL	THLKHHP	GGQIEAAA
R. communis	SAIFA	EVMOG	KPEF	TDHL	THLKHHP	GGQIEAAA
P. tomentosa	SAIFA	EVMOG	KPEF	TDHL	THLKHHP	GGQIEAAA
H. cannabinus	SAIFA	EVMOG	KPEF	TDHL	THLKHHP	GGQIEAAA
V. vinifera	SAIFA	EVMOG	KPEF	TDHL	THLKHHP	GGQIEAAA
D. carota	SAIFA	EVMOG	KPEF	TDHL	THLKHHP	GGQIEAAA

	360	370	380	390	400	410
C. reticulata	KQDRY	ALRTSP	QWLG	QIEVIR	FATK	STEREINS
C. clementina	KQDRY	ALRTSP	QWLG	QIEVIR	FATK	STEREINS
P. trifoliata	KQDRY	ALRTSP	QWLG	QIEVIR	FATK	STEREINS
L. chinensis	KQDRY	ALRTSP	QWLG	QIEVIR	FATK	STEREINS
J. curcas	KQDRY	ALRTSP	QWLG	QIEVIR	FATK	STEREINS
R. communis	KQDRY	ALRTSP	QWLG	QIEVIR	FATK	STEREINS
P. tomentosa	KQDRY	ALRTSP	QWLG	QIEVIR	FATK	STEREINS
H. cannabinus	KQDRY	ALRTSP	QWLG	QIEVIR	FATK	STEREINS
V. vinifera	KQDRY	ALRTSP	QWLG	QIEVIR	FATK	STEREINS
D. carota	KQDRY	ALRTSP	QWLG	QIEVIR	FATK	STEREINS

	540	550	560	570	580	590
<i>C. reticulata</i>	HLEENLKHHTVVD	TFSQVARKV	LTVCANGELHPSRPF	CEKDLLKAA	DREHVFAYI	DDPCSAT
<i>C. clementina</i>	HLEENLKHHTVVD	TFSQVARKV	LTVCANGELHPSRPF	CEKDLLKAA	DREHVFAYI	DDPCSAT
<i>P. trifoliata</i>	HLEENLKHHTVKN	TFSQVAKKVT	VCANGELHPSRPF	CEKDLLKAA	DREHVFAYI	DDPCSAT
<i>L. chinensis</i>	HLEENLKHHTVKN	TFSQVA	KVLTVCANGELHPSRPF	CEKDLLKVV	DREYVFAYI	DDPCSAT
<i>J. curcas</i>	HLEENLKHHTVKN	TFSQVAKRVT	TCANGELHPSRPF	CEKDLLKVV	DREYVFAYI	DDPCSAT
<i>R. communis</i>	HLEENLRQAVKN	TFSQVAKRVT	TCANGELHPSRPF	CEKDLLKVV	DREYVFAYI	DDPCSAT
<i>P. tomentosa</i>	HLEENLKSAAVKN	TFSQVSKRVT	TCANGELHPSRPF	CEKDLLKVV	DREYVFAYI	DDPCSAT
<i>H. cannabinus</i>	HLEENLRNRTVKN	TFSQIVKKT	LTVCANGELHPSRPF	SEKDLLKVV	DREYVFAYI	DDPCSAT
<i>V. vinifera</i>	HLEENLKRSTVKN	TFSQVAKRVT	LTVCANGELHPSRPF	CEKDLLKVV	DREYVFAYI	DDPCSAT
<i>D. carota</i>	HLEENLKRSTVKN	TFSQVAKRVT	LTVCANGELHPSRPF	CEKDLLKVV	DREYVFAYI	DDPCSAT
	600	610	620	630	640	650
<i>C. reticulata</i>	YPLMOKLRQVLV	EHALNNGENEK	NANSSIFOKI	AAPFEBELKAVL	PKVEENAG	QTVENGNP
<i>C. clementina</i>	YPLMOKLRQVLV	EHALNNGENEK	NANSSIFOKI	AAPFEBELKAVL	PKVEENAR	QTVENGNP
<i>P. trifoliata</i>	YPLMOKLRQVLV	EHALNNGENEK	NANSSIFOKI	AAPFEBELKAVL	PKVEENAR	QTVENGNP
<i>L. chinensis</i>	YPLMOKLRQVLV	EHALNNGENEK	NANSSIFOKI	AAPFEBELKAVL	PKVEENAR	QTVENGNP
<i>J. curcas</i>	YPLMOKLRQVLV	EHALNNGENEK	NANSSIFOKI	AAPFEBELKAVL	PKVEENAR	QTVENGNP
<i>R. communis</i>	YPLMOKLRQVLV	EHALNNGENEK	NANSSIFOKI	AAPFEBELKAVL	PKVEENAR	QTVENGNP
<i>P. tomentosa</i>	YPLMOKLRQVLV	EHALNNGENEK	NANSSIFOKI	AAPFEBELKAVL	PKVEENAR	QTVENGNP
<i>H. cannabinus</i>	YPLMOKLRQVLV	EHALNNGENEK	NANSSIFOKI	AAPFEBELKAVL	PKVEENAR	QTVENGNP
<i>V. vinifera</i>	YPLMOKLRQVLV	EHALNNGENEK	NANSSIFOKI	AAPFEBELKAVL	PKVEENAR	QTVENGNP
<i>D. carota</i>	YPLMOKLRQVLV	EHALNNGENEK	NANSSIFOKI	AAPFEBELKAVL	PKVEENAR	QTVENGNP
	660	670	680	690	700	710
<i>C. reticulata</i>	TIPNRIKRCRSYPL	YRLVREELG	TNFLTGEKVT	SPGKFDKVF	TAMCOGKI	IDPMLBCH
<i>C. clementina</i>	TIPNRIKRCRSYPL	YRLVREELG	TNFLTGEKVT	SPGKFDKVF	TAMCOGKI	IDPMLBCH
<i>P. trifoliata</i>	TIPNRIKRCRSYPL	YRLVREELG	TNFLTGEKVT	SPGKFDKVF	TAMCOGKI	IDPMLBCH
<i>L. chinensis</i>	AIPNRIKRCRSYPL	YKRVREELG	AGFLTGEKAV	SPGKFDKVF	TAMCOGKI	IDPMLBCH
<i>J. curcas</i>	AIGNRIKRCRSYPL	YKRVREELG	SGFLTGEKVR	SPGKFDKVF	TAMCOGKI	IDPMLBCH
<i>R. communis</i>	ATANRIKRCRSYPL	YKRVREELG	TGLTGDKVM	SPGKFDKVF	TAMCOGKI	IDPMLBCH
<i>P. tomentosa</i>	AIDNRIKRCRSYPL	YKRVREELG	TGLTGEKVT	SPGKFDKVF	TAMCOGKI	IDPMLBCH
<i>H. cannabinus</i>	AIPNRIKRCRSYPL	YKRVREELG	TGLTGEKVT	SPGKFDKVF	TAMCOGKI	IDPMLBCH
<i>V. vinifera</i>	SIPNRIKRCRSYPL	YKRVREELG	TGLTGEKVT	SPGKFDKVF	TAMCOGKI	IDPMLBCH
<i>D. carota</i>	AIPNRIKRCRSYPL	YKRVREELG	TGLTGEKVT	SPGKFDKVF	TAMCOGKI	IDPMLBCH
	720					
<i>C. reticulata</i>	EWNGAPLPIC					
<i>C. clementina</i>	EWNGAPLPIC					
<i>P. trifoliata</i>	EWNGAPLPIC					
<i>L. chinensis</i>	EWNGAPLPIC					
<i>J. curcas</i>	EWNGAPLPIC					
<i>R. communis</i>	EWNGAPLPIC					
<i>P. tomentosa</i>	EWNGAPLPIC					
<i>H. cannabinus</i>	EWNGAPLPIC					
<i>V. vinifera</i>	AWNGAPLPIC					
<i>D. carota</i>	SWNGAPLPIC					

Fig. 1 Suppl. The amino acid alignment of the plant PAL protein. A - Conserved domains of CrPAL1 from *Citrus reticulata* Blanco. B - CrPAL1 protein sequences of *C. reticulata* Blanco, *C. clementina* × *C. reticulata* (CAB42793.1), *Populus trichocarpa* (AFZ78650.1), *Daucus carota* (BAC56977.1), *Vitis vinifera* (AEX32784.1), *Litchi chinensis* (ACR15762.1), *Jatropha curcas* (ABI33979.1), and *Ricinus communis* (AGY49231.1).

