

Functional characterization of a class III acid endochitinase from the traps of the carnivorous pitcher plant genus, *Nepenthes*

Sandy Rottloff, Regina Stieber, Heiko Maischak, Florian G Turini, Günther Heubl, and Axel Mithofer

Fig. S1. Amino acid sequence alignment of endochitinases from various species. The amino acid sequence alignment and the deduced consensus sequence was generated using Clustal X involving the plant species *Pyrus pyrifolia*; *Lupinus albus*; *Cucumis sativus*; *Nepenthes rafflesiana*; *Beta vulgaris*; *Vitis vinifera*; *Oryza sativa*.

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|----------------|---|----------------------------------|---------------|---------|---------|---------|---------|--------|-------------|---------------|-------------|
| P. pyrifolia | 1 | MASKTQTLALTLSELLILISS-CKSSQAAG- | IAIYWGQNGNEGT | LADACN | SGNYQFV | NIAFLIT | FGNNQT | PVNL | LAGH | CDPASGTCTGLSA | |
| L. albus | 1 | MASLKQVSLILFPPLLLLLISSFFKLSNAAG- | IVIYWGQNGNEGS | LADACN | TNNYQYV | NIAFLST | FGNGQT | PELNL | LAGHSR----- | DGLNA | |
| C. sativus | 1 | MAAHKIT--TTLISFFLLSSIFRSSDAAG- | IAIYWGQNGNEGS | LASTCAT | GNIEFV | NIAFLSS | FGSGQAP | PVNL | LAGHCNP | PDNNGCAFLSD | |
| N. rafflesiana | 1 | MKTHYSSAILPILTLFVFLS-INPSHGSG- | IAYWGQNGNEGT | LSDTCAT | GNYNV | LVSLTT | FGNGQT | PVNL | LAGHCD | PSSNGCTGLST | |
| B. vulgaris | 1 | MAAKIVS--VLFLISLLIFASFESSHGSG- | IVIYWGQNGDEGS | LADTCN | SGNYGT | VILAF | VATFG | NGQT | PALNL | LAGHCD | PATN-CNSLSS |
| V. vinifera | 1 | MARTPQS--TPLLISLSVLALLQTSYAGG- | IAIYWGQNGNEGT | LTQTCT | NTGKY | SVVNI | AFLNK | FGNGQT | PELNL | LAGHCNP | PASNGCTSVST |
| O. sativa | 1 | MTSRMFSAMQMLIMVVVALAGLAAGTRAGD- | IAIYWGQNGNEGT | LAQTCAT | GNRFR | VIVAF | FLPV | FGKGQT | PVNL | LAGHCD | PASNGCTGVGA |
| consensus | 1 | * | * | * | * | * | * | * | * | * | |

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| P. pyrifolia | 89 | DTRTCQSKNIKVLLSIGGGAGSGSYSLTS | SADDAR | QVADY | IWNNFL | LGGQ | SASR | PLGDA | VLDG | VDFDIE | AGGGQ | FYDEL | LARS | LN | GHNGQA--- | K | | | |
| L. albus | 84 | DIKGCQGGKIKVLLSLGGGAGSYSLNS | ADDAT | NLANYL | WNNFL | LGGT | SDSR | PLGDA | VLDG | IDFDIE | EAGGA | QHYDE | LARAL | LN | GFSSQK--- | K | | | |
| C. sativus | 88 | EINSCKSQNVKVLLSIGGGAGSYSLS | ADDAK | QVANF | IWNSY | LGGQ | SDSR | PLGAA | VLDG | VDFDIE | SGSG | QFWDV | LAQEL | KN | FG----- | | | | |
| N. rafflesiana | 89 | DITSQONQGIKVLLSLGGGAGSYSLV | STDDA | DQVA | AAYL | WNNY | LGGQ | SDSR | PLGSA | VLDG | IDFDIE | SGSD | NYWGD | LA | TAL | KNYS----- | Q | | |
| B. vulgaris | 87 | DIKTCQQAGIKVLLSIGGGAGGYSL | STDDA | NFADY | LWNTY | LGGQ | SSR | PLGDA | VLDG | IDFDIE | SGDR | FWDD | LARAL | LN | AGHNGQ--- | K | | | |
| V. vinifera | 88 | GIRNCQNRGIKVMLSIGGGAGSYSL | SSNDA | QNVAN | YLWNN | FLGGQ | SSR | PLGDA | VLDG | IDFDIE | LGST | TLHDD | LARAL | LS | RIEFQ | QERGR | | | |
| O. sativa | 91 | DIKSCQSLGIKVMFSIGGGVGN | YGLSS | RDDAK | QVA | AAYL | WNNY | LGGT | SPSR | PLGDA | VMDG | IDFDIE | SGGM | Y | WDD | LARYL | KAYS | RQ | GSSK |
| consensus | 91 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | |

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|----------------|-----|-----------------------------|-----------|----------|------|-------|-------|------|-----|-------|-------|-------|------|------|------|----------|----------|--------|--------|---|
| P. pyrifolia | 176 | TVYLAAPQCFIPDAHLDGAIQTGLFDY | VWVQFYNN | PPCQ | YADG | -NANA | FLNS | WSQ | WAS | -VPAT | QVFM | G | LPAS | TDA | AGSG | -FIPADAL | KS | | | |
| L. albus | 171 | -VYLGAAPOCFIPDAHLDAAIN | TGLFDY | VWVQFYNN | PPCQ | YACG | -NTNN | FLNS | WNQ | WTS | -SQAK | QVFL | G | LPAS | EAA | APSG | GFIP | TDV | LIS | |
| C. sativus | 171 | QVILSAAPOCFIPDAHLDAAI | KTGLFDY | VWVQFYNN | PPCM | FAD | --NAD | NLSS | WNQ | WTA | -FPTS | KLYM | G | LPAS | EAA | APSG | GFIP | ADV | LIS | |
| N. rafflesiana | 173 | SVLVSAAPOCFIPDAHLDLAI | ATGTFDY | VWVQFYNN | EQCE | YVT | --DDT | NLSA | WNQ | WTS | -SQAN | VVFL | G | LPAS | TDA | ASSG | -YISP | DV | LIS | |
| B. vulgaris | 174 | TVYLSAAPQCFIPDASLSTAI | ATGTFDY | VWVQFYNN | PPCQ | YDT | --SAD | NLSS | WNQ | WTT | -VQAN | QIFL | G | LPAS | TDA | AGSG | -FIPADAL | TS | | |
| V. vinifera | 178 | KVYLTAAPQCFIPDKVPGTAL | NTGTFDY | VWVQFYNN | PPCQ | YSSG | -NTNN | FLNS | WN | RWT | SSIN | STG | SFM | G | LPAS | SA | AAGR | -FIPAN | VLT | |
| O. sativa | 181 | PVYLTAAPOCFIPDASLGV | ALSTGTFDY | VWVQFYNN | PPCQ | YSSS | NGVGN | LSA | W | KQ | WTS | -IPAG | R | VFL | G | LPVA | EAA | AGSG | -FVETS | D |
| consensus | 181 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | |

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|----------------|-----|------|-----|------|------|------|------|----|-----|----|---|----|----|-----|---|
| P. pyrifolia | 263 | QVLP | TIK | NSAK | YGGV | MLWS | SR | YD | INS | GY | S | AI | K | DSI | - |
| L. albus | 258 | QVLP | TIK | TS | PK | YGGV | ML | WN | GF | ND | I | Q | T | GY | S |
| C. sativus | 258 | QVLP | TIK | AS | SN | YGGV | ML | WS | -- | K | F | DN | GY | S | I |
| N. rafflesiana | 259 | QVLP | SI | R | AS | SK | YGGV | ML | WS | -- | K | Y | DN | GY | S |
| B. vulgaris | 260 | QVLP | TIK | GS | AK | YGGV | ML | WS | -- | K | Y | D | S | GY | S |
| V. vinifera | 266 | Q | I | L | P | V | I | K | R | S | P | K | Y | G | G |
| O. sativa | 269 | K | V | L | P | V | V | K | K | S | P | K | Y | G | G |
| consensus | 271 | * | * | * | * | * | * | * | * | * | * | * | * | * | * |

Fig. S1