



Supplementary Materials: Improving the annotation of the venom gland transcriptome of *Pamphobeteus verdolaga*, prospecting novel bioactive peptides

Cristian Salinas-Restrepo, Elizabeth Misas, Sebastian Estrada-Gómez, Juan Carlos Quintana-Castillo, Fanny Guzman, Juan C. Calderón, Marco A. Giraldo and Cesar Segura.

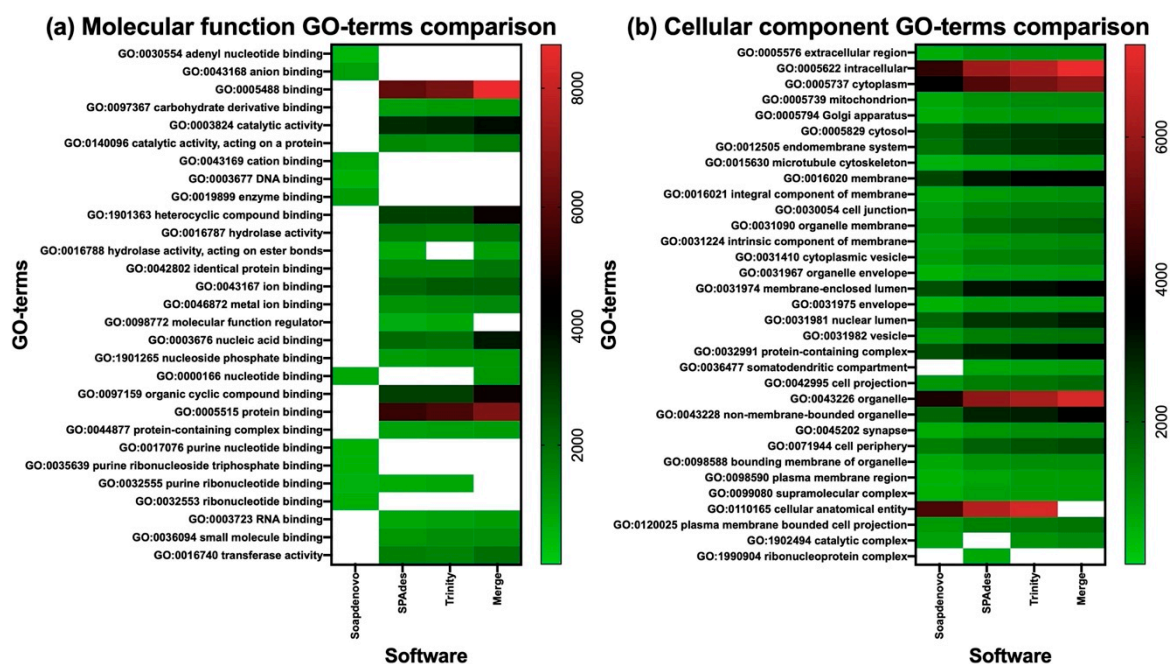


Figure S1. Comparison of the molecular function (a) and cellular component (b) non-redundant GO-terms associated to the functional annotation of the ORFs obtained from the Soapdenovo-Trans k-mer 63, SPAdes k-mer 31, Trinity k-mer 25 assemblies and the non-redundant ORF merge. Blank spaces represent absence of genes associated to the non-redundant GO-term.

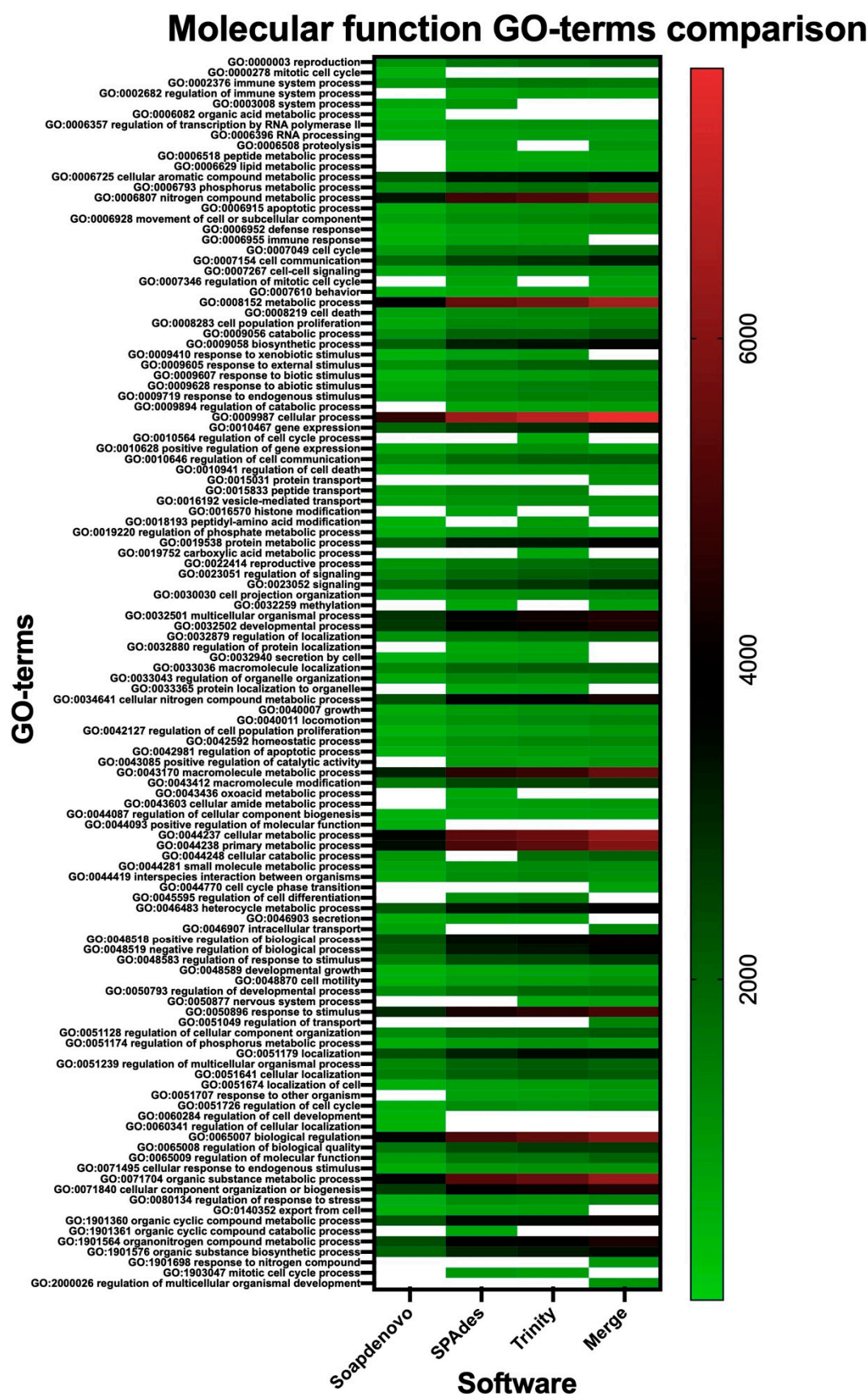


Figure S2. Comparison of the biological process non-redundant GO-terms associated to the functional annotation of the ORFs obtained from the Soapdenovo-Trans k-mer 63, SPAdes k-mer 31, Trinity k-mer 25 assemblies and the non-redundant ORF merge. Blank spaces represent absence of genes associated to the non-redundant GO-term.

Toxin classification (Top 20)

(254 out of 328 ORFs)

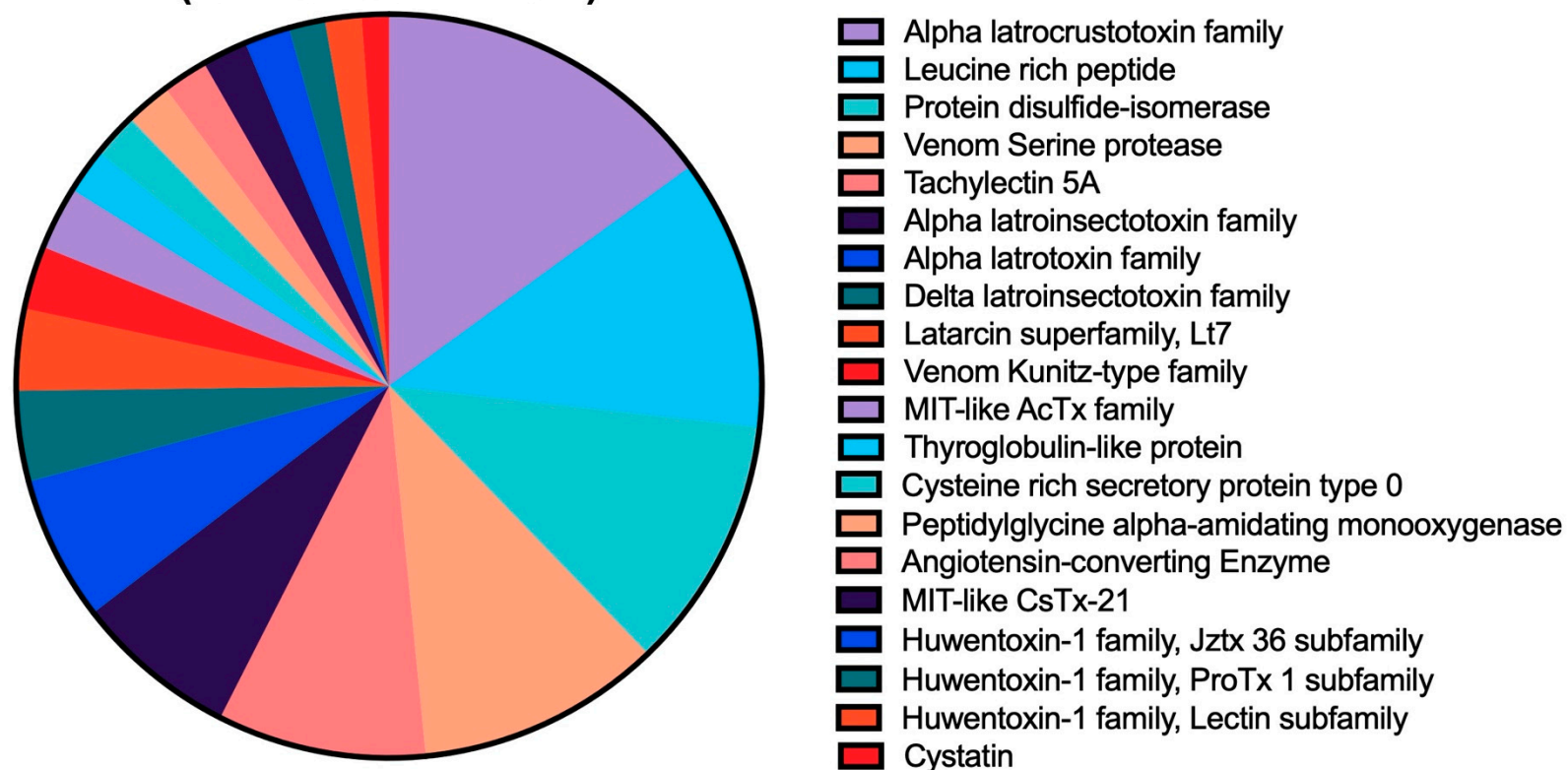


Figure S3. Top 20 families classification of the ORFs of interest from the merge annotation obtained from the BLAST (Arachnoserver + ToxProt) and HMM (hmmcompete) prediction strategies.

Table S1. List of the molecular function, cellular component and biological process GO-terms uniquely identified in the Trinity k-mer 25, SPAdes k-mer 31 and Soapdenovo-Trans k-mer 63 functional annotation.

GO Category	# of total terms	Soapdenovo-Trans	SPAdes	Trinity
Molecular function	29	"GO:0030554 adenylyl nucleotide binding"		
		"GO:0043168 anion binding"		
		"GO:0043169 cation binding"		
		"GO:0003677 DNA binding"		
		"GO:0019899 enzyme binding"	"GO:0016788 hydrolase activity, acting on ester bonds"	-
		"GO:0000166 nucleotide binding"		
		"GO:0017076 purine nucleotide binding"		
		"GO:0035639 purine ribonucleoside triphosphate binding"		
		"GO:0032553 ribonucleotide binding"		
Cellular component	33	-	"GO:1990904 ribonucleoprotein complex"	-
Biological process	113	"GO:0000278 mitotic cell cycle"	"GO:0006508 proteolysis"	
		"GO:0006082 organic acid metabolic process"	"GO:0007346 regulation of mitotic cell cycle"	"GO:0010564 regulation of cell cycle process"
		"GO:0044093 positive regulation of molecular function"	"GO:0016570 histone modification"	"GO:0019752 carboxylic acid metabolic process"
		"GO:0046907 intracellular transport"	"GO:0032259 methylation"	"GO:0050877 nervous system process"
		"GO:0060284 regulation of cell development"	"GO:0043436 oxoacid metabolic process"	
		"GO:0060341 regulation of cellular localization"	"GO:1901361 organic cyclic compound catabolic process"	

Table S2. Summary of the mature toxins from the merge transcriptome of *Pamphobeteus verdolaga* obtained with the BLAST (Arachnoserver + ToxProt) and HMM (hmmcompete) prediction strategies.

Cluster	Given name	sequence_id	HMM family_name	Blast2GO annotation	Cys	Length	Proposed mature sequence
1	U-theraphotoxin-Pv7c	Pv_sp_15215.t1	Huwentoxin-1 family, HaTx subfamily (IPR011696;PF07740;)	Kappa-theraphotoxin-Gr1a	6	35	GCGYLFGRQCNDADCKHLGCKRIPKYCAWDGTF
1	U-theraphotoxin-Pv7a	Pv_sp_10596.t1	Huwentoxin-1 family, Jztx 36 subfamily (IPR011696;PF07740;)	Kappa-theraphotoxin-Gr1a	6	36	DCRKMFGGCEKDENCCKHLVCKPTLNCLWDGTFPW
1	U-theraphotoxin-Pv7b	Pv_sp_11628.t1	Huwentoxin-1 family, Jztx 36 subfamily (IPR011696;PF07740;)	Kappa-theraphotoxin-Gr1a	6	36	DCRKLFGSCEKKADCKYLCKRTVKYCAWDGTFPW
2	U-theraphotoxin-Pv12b	Pv_sp_12576.t1	MIT-like CsTx-22	U-scoloptoxin(18)-Er1a	10	69	ELGESCEHSSDCSSGCCMKRKSQCNRAKIGEPSCGGQIKLDLYTERCPC EKGMSICSDEIHKCLA
2	U-theraphotoxin-Pv12a	Pv_sp_11319.t1	MIT-like AcTx family (IPR020202;PF17556)	Colipase	10	73	NRAVGASCRFSSQCSSGCCVTRTKPGGIRSCARKGKKGDLCEQQIKGGAYVD YCPCEKGDGHCQTGKQSKCLA
3	U-theraphotoxin-Pv51a	Pv_sp_3139.t1	Thyroglobulin-like protein	SPARC	24	510	SGPVCCTDGRYDSLCDIDVAKCQGHPEFKNFGTCPERARCEAQRALLMK QGNQMFVPECNTDGSYAEVQCHKSTGYCWCVDKDGKPVRGSSVKQRRPNC SSAGRRPNRRRTSRGRRQKKGCSNDRAMFNSNLIDIFESEYNRLEEPPLTTS AGDDADPLTDTHQKAVVQWKFNLQDENGDNLYLKKPEVRDLRRMAKKIVK PKVCAKTFACYCDLDNDKKISRSEWSVCVGVGINNEEVNIMDQVLDAPAV NDHRAANPSSRSLIRPELWDSQRQHLKHDGRLNAENDGSTVELDEKEEEIQ DCETARRAALENHRQDPAAGIYIPECNKEGFYMRACQCHKSQKFCWCVHVRT GKPLKGTQTQGVKPDCEARSSTRQFGKGSFQKKQDFLDELVSFVQVEMED AKNKSLSEAPHTERAARWKFAYIDNSNEVLDRKREWKVFKREWQSFHKDS KQKKRLRKWRNLPRFCDENNNQKITMDEWLMCTGITRDFKAGPAVTSG
4	U-theraphotoxin-Pv17a	Pv_sp_11450.t1	Arthropod Phospholipase A2 (IPR01211)	Group 10 secretory	10	116	SGLDFIGYGNYCGFGGEGKPVDDIDRCCKMHDICYDFAQNDDCAEDPNVVY KIKYGWQQKSFQVQCSFSQSKCMKVVCICDVRFAKCLKNYINEYNNNSNKHE KDLQELLEEVQQMS

phospholipase A2							
4	U-theraphotoxin -Pv18a	Pv_sp_12864.t1	Arthropod Phospholipase A2 (IPR001211)	Phospholipase A2 SSD387	10	122	DLDDLADMFEELTQLDPTEYIPYGNWCGYGGDGEILDRIDRCCEIHDRCYGK VSENVCSNEQVHIINYQWNRENDTITCDGNTSKCEMEACMCDRDVVLCHHK HNGDYSHEVRYVRFNQTKN
5	U-theraphotoxin -Pv52a	Pv_sp_1293.t1	Angiotensin-converting Enzyme (IPR033591)	Acetylcholines terase	6	514	GKLVNIDGNEVTAFLGIPYAEPPVGDQRFKRSVPKQSWSGVYDTTKKPPPCM QYSTKDFPWTMKTSTPSEDCLYLNWVPGNMNFFELGFKSKPVLLWIYGGGFF SGSSSELDIYNGATLAAVGKVIVVTNRYRLGSFGFLTSGTPEAPGNMGMHDQY LAMDWVKNNIKYFKGDPDMITLFGESVGGVSAGLHLISPLSRNLFRRRAIMESG APYHPLAAGNQSVMVVYNSLFATAAGCANDTVTIFTDSKKVIDCLRKTDNRQ LATVESSLLEKVPYFFLPIYGDDLPVDAITAMDKGDFKHTEVLIGNNLDEGA VLLHYISPFGFSQHASQLDKQAAA VITGLFQNSTNPPPVVSEFYLNDISDT DSSTIIKAVVDSYGDFIINCPSVLFAEKFSKGGEAFYYQFTHRSSNSPWGKWKK ACDFWRNYFVPSMGATHFEFVPFVFGDPVRNSSQYTAEEVTFSRVTVMKIWTT FARTGVPTVPKTEGWPKFTESRRLYLELNPKRLRIGEGPH
5	U-theraphotoxin -Pv56a	Pv_tr_11548.t1	Peptidylglycine alpha-amidating monooxygenase (IPR000720)	Acetylcholines terase	8	528	HWEGEYNATFLPPPCYQNYTIKFYWTPDVERMTEDCLYLNWVPGSVQETKP KAVFVWIYGGAFNVGSSELDLYNGAILASRGNMVVISFNRYVGMFGFLTTSIP EAKGNMGMFMDQILALKWIKANVHFFGGNSELITLAGESAGAMSAALFLLSPV TRGMVKRVILQSGGIIHPMSTHLKATMFKVAEQVSLFTGCSNNVNSLTTPNPKI VIDCLKNLPPNAISEAEGLLMKIFPITASPYSGEDFMPRNPDTMLIDGDFQDTE VLFGCNRDEGSNFLVFAPEYFGIYGAGAPTRMRKRLSAYIIKTIFERTEQKNNT RDIVRFYVEGRGNRKLNRNEDDGDDETDYFKTAIYDSIGDYMILCPTVFNADF MSVREKPVYFYMFTHRPSTTLNAKWMGATHFDEVFPVFGRLSDDKNYTEE DKTISQRMMDRWIAFTKTGNPNIEGIEWPHYKWNEPLYLDINAEEKIKLKP DDYRCEFWRARFGSTLDHFRSDTNVDTSIGTVSTKKVPFVLLMMCVMMLTMT RT
6	U-theraphotoxin -Pv20a	Pv_tr_1740.t1	Venom Kunitz-type family, Long Kunitz domain containing protein (IPR002223;IPR020901;PF00014;)	Tissue factor pathway inhibitor	10	136	YCPGDLDLGDICSLGPEPGVPGTNISCLAYFPRIYFNGLSGECDIFIFGGCGGN HNNFYTKEECEKFCPPVPQIPFDPTECGQYPEPGDCRAYLQRFHYDKESGDCK EFTWRMWWKQKQLQDAGRMRQRMWWSGDV
6	U-theraphotoxin -Pv55a	Pv_tr_3827.t1	Venom Kunitz-type family, Native Kunitz toxin subfamily (IPR002223;IPR020901;PF00014;)	Tissue factor pathway inhibitor	34	527	GPVCSDPKISPRVCKDECVKVTC PQHPEAICLADPCHNCVISFVSVDGTPVTC EDKCRQPLTAGNCRSFLPHYHFNQSSNRCEQFIYGGCHGNDNNFETLETCEQE ECEKKVPMCDQPKDVGLCRAQMFRWFYNKQTHKCEKFVYGGCGGNDNNF ETVEECERMCPDLVICPWWNVNGESLEPCSRSEACGNATCPGNADARCVVD PCTCGPTFVDKQGHSVSCVAETLEESTLRTMSVAQHTRCESMLKRHLIVGDS SYVPQCDDKGEFYVPQCTQEKGSKAQCWCVD EAGMQLPSSSTFPKGTCTCK LVKVQKVEVTLAFKHKDASYSETMVSAIKRLIEQFLMDMKAEYDKLSVIVRPD

							ATHVMFTLLSDNKVQLAFQLEEMVRMQGIFILPEAEMPVDYRASHFYHILDS KAEVQEEDNSVIANPISSVKLEKERGWATFLSFTVIGVFGFILIYVPLVIHRRR QKKGEEEPTRSSLVGMVFNNTITYGVVGKKAADKNSSASDIPKEVIVQTVAEY ETL
7	U- theraphotoxin -Pv22a	Pv_sp_2566.t1	Cysteine rich secretory protein type 1	Cysteine-rich venom protein	16	179	WAEECQILTYDGILGKYVEDYGSCGQNFVSNEKVPWTFVGEAWFAERYDFS YGSYNNSVSEVGHYTMVWNGSHRLGCGFHYCAKDVKKPFYNYVCNCP MGNDPKRLGMPYSSGKPCSECIKHCKYKKLCTNTCPYADLWVNCAQLNVT WNDWLCSNPEHQHRHGRATCLCPGKVI
7	U- theraphotoxin -Pv36a	Pv_sp_3922.t1	Cysteine rich secretory protein type 3	GLIPR1-like protein 1	32	331	LHNMYRSNVTTPAADMNFMEDWDEYLAKAAQDWANGCRFMHAFPPYVEP GSMGQNLVMGHDPTGVRALLWNEEYIYDIKTLDCVPKGQCGHYTQLAW GDSKSVGCGMKRAIRFLVCHYSPIGNIAGYAPYNIGKPCSQCRTGAGGL CANNMVCVTKELCERSPEKCEYDCPLKCRNCGTLDKESCKCTCSDGWDSLDC SRCKNAHDRCGKNPGWPSVTSCPMNNHVAADTYCRKMCGKCRGVQWSD PEKLCCNGTVCANGYLSEKQNSCTCDLLCPGLCYITPDYDVLETTADVGS HHTKAVYGSFTLVALINFLIPSVHGL
8	U- theraphotoxin -Pv24a	Pv_sp_6678.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain- containing protein 1	8	262	TTKSPCEKSAKAETYLDTAADMISRVKENLPKDGGVCKCPRKPMDCQQLNC GHTQSKVKVWPKNRIIDGGISVFCDMETDGGGWTVVQRRGDYKRASDFN KKWKEYKTGFGDKERDFWLGNNDNIYALTNQRKYKIDLDQSENTRYAFY DQFWIDNESQNYKLHVYDYFGDAGDSLAPTHGGQMFSTDRDNDKSSTQH CAAKYKGGWWYNECFEANLNGLYDMNGNSVGEEGIKWNSWKSDESLTFTE MKLRPVDY
8	U- theraphotoxin -Pv42a	Pv_sp_2022.t1	Tachylectin 5A (IPR002181)	Ficolin-2	8	363	QFSVLGNELRTEMTSLRIVASSSGSRCGSVDFTDDDDDLQETGIQGRASPRSGR RVSGNSLAGGSASSVEDTLDVLVQSLGNSTREIREEIHQGIQDIDSKLTSISRLSC SEGLETSESVSARKIPPPQQDVAAKSEVCSRVARNVTSPPQSCADLRGGATC DGVYVIFPQNVRAVRTLCDMTTEGGGWTVLMQRGDFNNKMSSFHKNWASY KNGFGDVEGEFWIGNDVIHLLSAQDENILRVNLEAFDDDLNLTYSFSVAD ENDNYKLRLGVTVGTPSPASNSLRYHSNHPFSTFDKKNDNFQNCATYKG GWWFNGCYFGFLTGEYFRPGEKRENWQGILWYDWKGNASLKGAQMKI
9	U- theraphotoxin -Pv25a	Pv_so_5176.t1	Venom Serine protease (IPR001314;IPR00 1254)	Transmembran e protease serine 9	10	220	NATICTASVLSPTCLTAAHCVADDNGNAQNPSYVGMVLGTLADGTGGLI ASVAEIIHPNYNEGGLTQNDIAIVKLSSPVVFTEKIQPVCLGSAPPPFSKCTISG WGKFLHILGVS NVLRYSPHQIVYFDICKIGYSNFPNTTQLCIEGLGLGSCNGD SGGPLVVQRNNRLEQIGVVSYGRPVICNAPIIGLVVYTEVYAFRDWVLQVSND PQICIA
9	U- theraphotoxin -Pv29a	Pv_sp_7148.t1	Venom Serine protease (IPR001314;IPR00 1254)	Coagulation factor IX	10	278	PVCECGSNSKPLQTRVVGGKNAAGDFPYATGLLASYNIIIFGRQVLGTMDYT PYCGGTLITDKHVLTAAHCVDRDRTASQIRLDVGEYSIEDKKESRIIRDARSLK HPKYVPKVFNRNDIAIIEAEPVKLNSKLKAAWLPPQDARIASGTPVTVYGWGR LDYEGGRPQVLQMLQMPVVSSECEHLVTPITPNMLCAGGEQKGDACIGD SGSGLTTKRKDENVVVGVVSFGRKCALPHIAGVYTKVSGFSWDWIYENTRSTEC QPCIASLEDAEDSQ

9	U-theraphotoxin-Pv37a	Pv_sp_1715.t1	Venom Serine protease (IPR001314;IPR001254)	Serine protease hepsin	14	334	DGCLTVDNAGAGECTVFMECRQAVVELKTKFPTICTWDGDVPIVCCPKEKQE DIDDDMLPRTLRLADCGRRRAAVAKRPTIAGGVEAQPGAWPVMAGIYIRNFG RDVFLCGSAIVSDKYVITAAHCFGQRRGGSVIQTARYAIFVGSCLKVKEGTLHTLS SITIHPQYKPREHYNDLAVIEVRERMTFSTYVRPICLPSPGEFQDIDGEDVTVIG WGDQDFGGVQASVLREVTQVIANKDCNDAYTKLRGSSIPEGITNKFICAGV PEGGKDACQKDSGGPLMVARDGVWSLVGIVSFGYQCAQAGYPGVYTRITEYI DWLDESINVEDSSPVPAQ
9	U-theraphotoxin-Pv39a	Pv_sp_4039.t1	Venom Serine protease (IPR001314;IPR001254)	Coagulation factor XI	12	341	TPCPLANLQCCPFPSNETESLEDDGYEHSPLVLYLDDDDNDNQSGMENPRGTT VPYSQTQQTVPSSVEEVILFEPTQNLACGQAPYEPFIAGGVESDPFKWPWMA SIFQRFTVARPHKFLCGGSLINTRYILTAAHCCVAGANNIPRPAFLVRMG NHLDDQGGEDFSVSKVIVHSNFSYSGQYNDIALRLGTVAYTDRVAPVCLPD VSLAEQDLEGLLATVVGWGATSVGGEHQQTLEHEIPVPTEDCVLAYSRIKS AAFLARGSTHVLCAGLKEGGKSDSCSDSGGPLMMQSDGIRWTIVGIVSFGHR CAEPGPGVYTKITHYLEWIIHSNAIE
9	U-theraphotoxin-Pv40b	Pv_sp_6027.t1	Venom Serine protease (IPR001314;IPR001254)	Serine protease 27	14	344	SVIYPTDPPFQEVCEANTICKEAASCPDFNTQTEICGWNGSRPMVCCTERRN TGKTEKLHPNTECGIQGGTNRQAVSRISKRQAGLEIEHGEPPIVGGKDVEPF PVMGALDKVAYRKNHRFLCGSSLISPRHLLTAHCFQRGDDKTPQKFSVRL GAHGLKDGTRYISIRTVIHPGYNFRQNYNDIAVLTLAEIIPPSQKSLPICLPEAE AGRRENLVGRSATVIGWGHTSYGGVNSRVLQMVSIPIVDTGKCNSTYMTIVH RTFPRGITDDFLCAGVEEGKSDSCQNDSGGPLQISDGGRFIQVGIVSFGYGCA EPGPGVYTRVASYVPWINEVMAKTL
9	U-theraphotoxin-Pv41a	Pv_sp_3053.t1	Venom Serine protease (IPR001314;IPR001254)	Complement C2	10	362	ALFMITDGEPNVGDGKITPRDAASSLKEKNDFEIFTVGIGKGINTDFLTSIASEP PESHVFIKKYSQLKDMISIIRTLPEERPKEGPEKCGYIDESRKPTERYERWPWLA AVYTSFPKADVQQPGHFKMSLCAGALICRDWVLTAAASCFHETNRREIVLSLR EVFVAGEHNILEIDKSQKNYYATDVQTHPDFDPFNPLNLLALIRLNEAVPL NITFRPICLPRTDLIRPLHEDLATNTSTAGWGRPLKLGFTHGINAATTNFNLR KPIALAEEGECLRRLKRKAMGNIFCAGVGESDCLGTIGSPIIAQDPNTEIRHILG VLTDKSDCNQGYSQLFELRRYIPWIDGITNSCRLRHQM
9	U-theraphotoxin-Pv40a	Pv_sp_5436.t1	Venom Serine protease (IPR001314;IPR001254)	Enteropeptidase	14	368	SVTFPGGSSNRDGCEDSPKGTVCVVSRCPGFNRMKRCGWSNLEPKVCCEE KKLAPVSLPQNLNCGIRPKRNPSCALRKKRETAQDRLWRALQLSKSIESLPLN APEPGLGLRVSKPSVVGQVEPLSYPWMAALDKKTYGTNFRFHCGASLISG RHILTAHCFKLGEEKSPNTFTVRLRAHLKTGGTRYNVRKIEIHPGYNGRENY NDIAILSREVSITDYVSPICLPQAETSRVRNLTGTTAHVLGWGHTSYGGVDS QVLLEASLPVVDTAQCNAAYKNVASRSFPRGITNYLLCAGYNEGGKDACQN DSGGPLQVLTNNRWFFQIGIVSFGYGCAEPGPGVYTRVSRYVPWIEEVMKTS
9	U-theraphotoxin-Pv43b	Pv_so_7495.t1	Venom Serine protease (IPR001314;IPR001254)	Proclotting enzyme	14	381	IGSPCVTPDRREGQCVLTECPVLLRVNNFNRLRRFICGYEDEVPKVCPEESI GGQPQTPRPPTTRTPPPPTPTPTTRTPPTPARRTPTPTTRTPSPRPQPTPPSV PGRSRPDLPLSDCGHSNTTKTRIVGGREAEGAWPMAVVYQTKRGGRKSP DCGGALVSRSHIVTAHCVVGRGIEPLSPSVLSVRLGEHDLYSDDDDMNVPVEI NVRSVRRHDFRDPRTYRNDIAVLLLERPVEFNPNIQPICLPYDSLKDEDLTDRS

							GFVSGWGTTSFNGASSNVLEVSFPIVDDEFCDRAFRQDLPTDVYICAGTAD GSKDSCQGDSCGGPLMLPGRGGRFYLGIVVSFGKRCAEPGYPGVYTRITKFLDW LTQNLSS
9	U- theraphotoxin -Pv43a	Pv_sp_2944.t1	Venom Serine protease (IPR001314;IPR00 1254)	Transmembran e protease serine 12	14	429	SIIFPKESSETEEEGPQPCVTPRGRNGHCVIVTRCQLLWNHRRNYSLLRRLNCG YQGEVPKVCCPVHSTPSTQQTITTTTTTTTTTSPVSTGRYPYQGRRRPLAGIPLL PPHEEPGTRGQAALDRSGSVTKKLPSGSSQESIGSNKGVNNSKLATIGRNYDEI ISLLPKCEGKNDVPLRRIVGGHESIIGAWPWLAALYLTRRGIKTAECGGALVT AKHVITAACHCTVNSRRGTTFDASQIIVRLGDHDLSDDEDGLTPVEVRVSNIIK HENFVLRTFQNDIAILELVSSVQFHKYVTPLCLPYGVFQGGDLAGRNAFVAG WGTTSFDPGASSKLEVLRIWENSDCGVFRDVPITNVNLCAGDGDGDAC RGDSGGPLMLPYRDGKFYMGVIVSFGKKCAEPGIPGVYTRITAFLDWIANNIK STL
9	U- theraphotoxin -Pv47a	Pv_sp_3992.t1	Venom Serine protease (IPR001314;IPR00 1254)	Serine protease 27	14	449	CRYRRTPGTCKRRSECNQPTRRVCRVGLDPVCCDRPDEDHFKPSIIFPQETPQ QRPRPTTRKPSIIFPQETPAPRPKPSTPRPRPSTPRLRPSTPRPRPSTPRPKPPQAA KPPPPKPAPOKVPDLTFPGCGSRSPSPVDNNAARTSARIGGSGGRSSRRRGFWR SKREISASYDAGDLVDNEPAVKRFRKQMFPRPVVGGIMAKPNSWPWMTAV FKKSTPGSTSRFLCGASLISTLYVISAACHCFDAERGNIDPSKFTVSLGAHNTRDG TEYPVESIKIHPNYQQRQYYNDLSILKTARPVKLTNKVYPVCMPOPTIVSRIVT HQNVTTITGWGDTSFGGVGSKVLHEVSFPVVPQRQCNASYAKIASSTFPRGITD NFICAGLEEGKDACQGDSCGGPLVMNTVEDKWVQVGVVSFGYGCAQPGFP GVYTRVEKYTQWLYDNSDLGRQ
9	U- theraphotoxin -Pv49a	Pv_sp_3247.t1	Venom Serine protease (IPR001314;IPR00 1254)	Serine protease 27	14	475	CSTGEGRAGICVAKRYCREAVASPRQTLTACSGTSGFYCCPVPTARSSSEDSSSS DQAPPAAPVRPTPSAVGTSTPRRDIRYPESDSRYRPGSNAEQSDYSSSSSTHD GKYRYPDKDDSPRETRVKEPDNTNSGSRHYHGEVRLPNRDKPSTKRPIYEDQ DRKHVPNNNSRRPSVQRTTSSLPRRNDRSQEKYTTPTSLIKFPPEYKPPHPAP ACGQKPYELFIAGGEESRQHEWPWMVAIFRRHSSPKPNTYICGGSLNRRYILT AAHCFIHNYVILPASTFVVRLLGAHYLDSEGYTVANLVVHQNHSGSDDFFNDI ALIRLASEVFFTDKIAPICLPTREMSYKTFVDRMATVAGWGSTAFYRIADSRVL QHVSVPVLLNEECSSAYSVRVGA AFLARGTDHIICAGLREGGKDACLDGSGG PLMLKGDDDDSWTVIGIVSLGYKCAEPGYPGVYTRVTHYLSWIYSNMKN
9	U- theraphotoxin -Pv54a	Pv_sp_3640.t1	Venom Serine protease (IPR001314;IPR00 1254)	Neurotrypsin	28	524	VEVLVNGQWGNVCVDNWQYKEAQVVCRLGYPLGALEATKRSQYGTGTG NYVLCGLICFGNESSISECGLDIFPCSRCSRGAAGVVCREYEKTCPEYYFKCQ NDRCVDYGSVCDGFDDCKDGSDEFPSLCKEPEVRLVDGNDKYSGRVEIKFLN IWGTICDDTFDDKDAQVICHSLGFRGPATAHGNAFFGPGNGVIWLDGLHCN GSEAKITRCPRERWALHDCKQYEAAGVTCSSPQGHDLIESMECGIESGDHISP NYEFRRLPGRSSLKLEINRMTSPMLSSRATALRFPARRRVARMVFSEKITLLA SFPWIADVRYHAQGKSYHACGAAILSEFFIVTAACHCNKHTKRDYIIRVGEFD QNKKDRFEEDFEVERIIHEKFNEAVRLNNDIALVKLRQKAKRGHIFSEDVRPI CLPTPETPYLPEIWA AVGGWGITEHSTKSSILRLAYVPLSPVQCKGFTDYGTN KIRPGMLCAGHIDGGSDACKADSGGPLVTKFNGRSTLLGIVSWGHCGEA

9	U-theraphotoxin-Pv59a	Pv_sp_2198.t1	Venom Serine protease (IPR001314;IPR001254)	Neurotrypsin	18	655	SCGSGRCPGNRRNQDSDHPGGNNKNDNPGGRDKDRPAILGPDDWPSSSTGGRP GIGSDYQPDTVGGGGGSDKDRPAILGPDDWPSSSTGGRP GTYEKDDYVPKPVSGGGGGGRDDYNPKPVTGGGGGGGRDDYNPKPVRGGG GGGARDDYNPKPVRGGGGGGGRDDYNPKPVTGGGGGAGGERDDYNPKPVR GGDDYNPKPVRGGNDDYNPKPVRGGNDDYNPKPVRGGDDYNPKPVRGG DDDDYNPKPVRGGNDHNPKEPWSPTDRHPKPIESNDNPKDDSYNDGS SKDNIRENIRPGGNCICVPYYQCKDGHIVTDGAGIIDARRKPNNEEELPLDGK FKPPSCGPFHVCCNTPETSTVKPYEHRGVRNPSGINSRILSPSNAGEADFG WPWQAAVLKSEGTVNIFQCGGVLDKYHVLTVAHCVFHLRKYNVFPLKIRLG EWDQTSTSEFLAHEDYKVSIIHPEFRNHSLWNDLAILKLEEAFLFAPHIDTV CLAKHDENFAGQNCVVTGWGKDAYKGGTFSNMKEVAVPVIDNYNCEEM LRKTRLGRFFQLHEGFLCAGGEHGLDSCKGDDGGGPLVCYRKDRSYALAGIVS WGIDCGQPGVPGVYVKIQKFLDWISKNTGLQLEDYWPKSY
9	U-theraphotoxin-Pv61a	Pv_sp_435.t1	Venom Serine protease (IPR001314;IPR001254)	Prothrombin	56	993	ILPIGNLDIGLGVNVNGKPEPKQCDPTDITCTCGIGGRSIFIRVPQCTYAHRW KTKCKPCDKMEPKDVCCKFQNCQLCHLNGGDQCASCPPRKFNGWCENDCF CENGGDCCRSGRCICLPGFAGLCERRKGCPPPQLVAPPLQENRQPPNNPAT IVYACPSDYVLRGSPAITCQPEGQWSGSPQCLRKCPVLSAPANGREYTSNES VEGTSAITRCNDNFQLVGQSTIHCLPGGVWSSSLPRCKRLSSCSDPGSAHSTR HIESSNGLQTGPFLGTQIQYSCLEDYEQMGTDITCLSDGKWSDERGVCLKV SSISPDCSTRGEEIAEEIGVPVRILCPPECANGAPRLWGTSTYKKESAVCPAAVH SGIVTNTGGLVDVISNGEYDHFVGSNLNNVRSQSSDDRADSFRFNKVPPLVIS KDEKGCPCNLLRLQKSCVYASNNRRNKAEAEIACKNLGLHLSFADSDEERK NLFAVLSEKGITKIWTEKAENHRADGTAPNSCETASISDANTITEEPADCQMR TNFVCAYGSNIRPLASCQDQGTLTNGQPKAVGKIGDVYVGSSEIYTCDTLHY MKGERIVYCTSNGTWSAPKPTCTRLNTCEAPQVPIGGGVKYFPPLSNGGTQRS GDVRTAIQASRMARLPAGLAAPVPASLSGSSPPQDEEEIENIELPPGVYRVGTR AMYDCESRYQLVGSRTTRCESRGNWGRPPTCIPVCGRSDSPSPFIVNGNA SDIGQWPWQTAIARWLPDYSRWFLCGASLLNERWVITAAHCVTYAASTLPI DPDRFQVYVGKYHREDSKDDEHVQVKVHEIHIHPDYDPNLFADIALQLLE TAVQLNSRVQPVCLPSEQTSRENLENGRQGVVTGWGMNENETYSETLQAV LPVVSHTGCEKGYRDSKLPLTITDNMYCAGFAQGKTDACSGDSGGPMVFLDE SAKERRWILEGIVSWGSPSGCGHANQYGGFTTVSKFLDWIHLFF
10	U-theraphotoxin-Pv28a	Pv_sp_8942.t1	Protein disulfide-isomerase (IPR005792)	DnaJ homolog subfamily C member 10	6	258	EEKLLVLFTTECCSCTECVETEVLGAMSADIENTFNLPVVKLKKTDMRKSYG VKTVPVSLVFIRNGKPVQFDGQFEKEALFIWIQDNLDPATTHLDDHNFEHLTQ AATGATTGDWLVAFYSTACFKESNLTNMEGAGSHLRNVRNVALVDTEKSP ELVQRFKIKHCPEIIFRLGKMYRFSLSSESSALALKRFAEGFYKNSKSETVPVPKS PFDKLEQLFESTRQYMFELTVFMITLTLVVMFIILSVLKKGQE
11	U-theraphotoxin-Pv30a	Pv_tr_4119.t1	Protein disulfide-isomerase (IPR005792)	Protein disulfide-isomerase A5	6	283	KLTVQSMVNFLLKDPGSDMPWEEDEHAQDIVHIPDANALGKVLHKEKVPIML MFYAPWCGFCRKLKPEYEAATELKGHSILAAMDVNKPNISVRKHFNITGF PTLLFFEGLNLKHKYDGNNKDSIVSFMRNPTKQPEKPEPEWADTPSDVVH

							LTDAFMSEIQSEPSVLVMFYAPWCGHCKKMKPEYVTVAARLKQQNIPGML AAVDATKEKTLADQYKINGYPTLKYFRNGEFQFDVSLRTADQIEEFMMDPKE PPPPPEKEACSSHVLCMTMVWPLQ
11	U- theraphotoxin -Pv33a	Pv_so_7333.t1	Protein disulfide- isomerase (IPR005792)	DnaJ homolog subfamily C member 16	8	296	YDLHGEEGLKDDFGSGWQGSFRSWNYYESFGIYDDDDPEIITLSRSDFEQSVIG ARDTWFINFYSPQCCHHLAPAWRALARELEGVIRIGAVNCEEDWMLCRQ QNIHSYPSLMMYPQQTKYGRSRTDSMVDYVLQQLPDVVIEITGHNQFELVS REEYKVHPWLISVCKEEDCLSEALRKLLEGLVNVAKAEYGLDRAVCDK LDCRSLITFYNSLSPVETVAVHQIKETEVKPVLENEVLLLLPGATEMTEEMFQN VRKGDLSYKWPWLHFTKSSLKESDGNMDEL
11	U- theraphotoxin -Pv44a	Pv_tr_7700.t1	Protein disulfide- isomerase (IPR005792)	Protein disulfide- isomerase	4	434	TEEHVLVLNKNDFDEAVKDKNVLVEFYAPWCGHCKALAPEYAKAAEKLEE EKSEIKLAKVDATEETELAEKHGVRGYPTIKFFRDGKILEYTGGRSDDIIRWLK KKTGPPASDLSSADGAKSFIEGSEVVVVGFFKDQDSKDAKVFKDVAEMDDY PFGITSDDVVYNELKASKDGVILFKKFDLRNEYDGELSDEELKKFVKSNSLPL VVEFSHETAQKIFGGEIKAHNLLFISKESADYSEKVFVKVAKDFKNKVLFT INTEEDHERIMEFFGLKKEEAPTMRILKLEEMTKYKPETAGISEDEIRNFVQC VVDGKVKQHLLSEDIPEDWNKEPVKVLVGKNFDEIAFDKSKNVLVEFYAPW CGHCKQLAPIYDQLGEKYKSSADVIAKMDATANELEHTKINSFPTIKLYRKD TNEVIDYNGE
11	U- theraphotoxin -Pv46b	Pv_sp_3707.t1	Protein disulfide- isomerase (IPR005792)	Protein disulfide- isomerase	6	448	VHEHDTILVEFFAPWCGHCKRLAPEYDQAAAAALKKADPPVPLAKVDCTSDS GKDTCSKYGVSGYPTLKIFRGGEFSSEYNGPREADGIKYMKSQVGPSSKELKS VEDAETFLSKDDVVIVGFFKDTSSKLKEEFLKVADKMRSSSTFGHTVEPEVLSK YEFSEQIVLFRPKKYWSKFEPQAVQYTGSAADKGQIQQFVKETYHGLVGHRTH DNHEDFKAPLIVAYDYDVYVKNVKGNTYWRNRMKVAQNYKDKVNFASIN KDKFSAEVEDYGLTTKGDKPIVAARNTKLQKFNMKKEFSIENFEKFVQDFVD GKLEPHLKSEVPETNDGPVKVAVAQNFEEVLTENTKDVLEFYAPWCGHCK KLAPTYEELGTRMADEDVEIVKMDATANDVPAPFEVHGFPPLYWLPKNQKS SPQRYEGGRELDDFIKYISKHATDELNDYDRK
11	U- theraphotoxin -Pv48a	Pv_sp_3723.t1	Protein disulfide- isomerase (IPR005792)	Calsequestrin- 2	8	467	VCHLTAENYTTVLSAAEVAVVVFTAPQPTKQPTVCPTELDNFAEVSAQVLRK KNIIVCEASADLLTSQQTAPVPQVNAGDVYIYKKGQGVPPYGRSTPALLSFL FKVNGTQVNVITGKIDKIAFDVQGTQKIVGFFMQGTADYNAFEAAAKLSPS VAFYVAFDRVVAKHLKLETVGQIHLIKPLEKTPPCPNPASAADIEAFVGSQ KGAILTKMNEHNLYDPLQDPSRTLVAIGEEASSFGGYFHLVTKLVRNNT NNTFEKLNIVWIEPQIFPTIHLMMSELETTLGIPNKLPAFGTVNITSMQSAWL NTALLNTTSDKTSDEANLKILQDFLSSVINNTIVPVKIGSQSFVQMPASQVVAE GSDVLLCEVLENLVGDCLWLRNGQNIGFNLARFTQYSWRGDQTAGDCSLQIT GIQKGRDDGEWVCEVTGDAENPTVTSSPAKIAISGAADTLAKSEL
12	U- theraphotoxin -Pv38a	Pv_sp_4280.t1	Cystatin (IPR027214)	Cysteine proteinase	8	339	SLSQMYKLDYFNCDLDDSSKGQRSVSDKEHIERGMFADFVAKFSKVYSEEEEE LRFRIQENLEKIKLHNDLERGTAKYGVTKFADLTATEFRKYALGFRPDLLDE DNPLPLASTPKDPIPTSFDRWTKGIVTEVKDQGCQGCSCWAFSTTGNIEGQWAI KKTKLVSLSEQELVDCDKVDEGCNGGLPSNAYKEIIRLGGLEGEKDYPYEGED

							EKCNLNKTEVRVYINSSLAISQNETEMAAWLVKNGPISIGINANAMQFYGGI SHPWKFLCSPKNLDHGVLI VGYGVHSYPLFKKTLPFWIKNWSWGATWGEQGY YRVYRGDGT CGLNLMATSSVVD
-	U- theraphotoxin -Pv5a	Pv_sp_10092.t1	Huwentoxin-1 family, Lectin subfamily (IPR011696;PF077 40;)	Kappa- theraphotoxin- Gr1a	2	26	FCTFLVHAAPAKKRQRFFCVIDSSTQ
-	U- theraphotoxin -Pv6a	Pv_sp_14704.t1	Huwentoxin-1 family, Jztx 36 subfamily (IPR011696;PF077 40;)	Kappa- theraphotoxin- Gr2c	6	30	DCRQWKQPCNNQYRCCKGSYCAMVCIQMWG
-	U- theraphotoxin -Pv8a	Pv_sp_8204.t1	Magi-1 superfamily, Ltx4 family (IPR012627;PF080 92;)	U1- theraphotoxin- Tal1a	6	37	CLGENVPCDKDRPNCCSKYECLEPTGYGWYASYCY
-	U- theraphotoxin -Pv9a	Pv_tr_11074.t1	Huwentoxin-1 family (IPR011696;PF077 40;)	U1-nemetoxin- Csp1a	6	37	KCKPYGQKCKTPQDCCSEACSSDNECSNREVVLMLYG
-	U- theraphotoxin -Pv10a	Pv_tr_16283.t1	Plectoxin superfamily (IPR004169;)	U8-agatoxin- Ao1a	8	42	ACVRRGSSCDGKPNDCCPNSSRCNLWGTNCR CERAGLFQQW
-	U- theraphotoxin -Pv11a	Pv_sp_11289.t1	Cystatin (IPR027214)	Cystatin-C	4	69	QVVAGVNYGITFTVGLTTCKKEEVDYKDINACEFQDNISTYRKCDVIIYRNLD DEYKLTWSGCILTKPE
-	U- theraphotoxin -Pv14a	Pv_tr_15647.t1	Peptidylglycine alpha-amidating monooxygenase (IPR000720)	Peptidyl- glycine alpha- amidating monooxygenas e	4	107	LPLLMPDVQPMQKETYLCTAYKMPRSDEYIYEFEPNATMHTAHHILIYGCSL PGRWERDSPRLVWDCGEMVGVHRGFISGPTCSSGSQIYAWAKDAPPLKLPE VS
-	U- theraphotoxin -Pv21a	Pv_tr_14111.t1	Leucine rich peptide (IPR032675)	Insulin-like growth factor- binding protein complex acid labile subunit	6	164	LAKNNLTQISAGDFDSYPHLGLLVDDNCVSEIENDALGRLEYLMRLWLNG NCLSKVPPNLPSSLALYMEENRLTELTSYFGLVKLEQLFLQRNDIRYLEIC AFCDLVSLQSLDLQANQIENLTAGVFANLTNLQTLDL SQNILKLLDSRCFEAP CSYTEL

-	U-theraphotoxin-Pv26a	Pv_so_6369.t1	Protein disulfide-isomerase (IPR005792)	Thioredoxin domain-containing protein 15	8	231	NEDYHLPSSSVTMEADAKSQENGTVEGNTVLTNATSGSENKTSVKVECLLG ELEEGEIPAVHLINGTMLIKIFSAPANNSTAGECSIVMFYSPYCVFSARAAPHF NALARVFPGVKCYAVDAMTNGNLHLRYGLVAVPNVMLFHKGKPIARFNET HLNLERLVTFIEKYTGLOQYNGTLNVTSADMSGPVPSTLSKKVDYVLILAWIFTI CCMCYGFSGSTLCHKIIESV
-	U-theraphotoxin-Pv27a	Pv_sp_3913.t1	Insecticidal toxin ABC family, Calisoga subfamily (IPR012626;PF08091;)	Disintegrin and metalloproteinase domain-containing protein unc-71	12	255	YIELALILDQAFFEMHNSPPKEVIGNAIQMINCADLHYHSLNASISLVHIELWT EDVIHVEPNIEQNQLNIQEYLEQQYDRRSMDAIHMLSGAAFNDSSVSGAAETD SICTVKA VGITKVGNIHQTHVTSHVITHMLGHNLMGYHDHDCCTCPYKSGC HMLNHIQSVQPFHFSSCSIEDYFRTLKRGYGVCLFNMPMLRESICNGNGILEKG EECDCGTSEVGMDIATRETAQLLTISVHSCGEVALKQQIQFVTRG
-	U-theraphotoxin-Pv31a	Pv_tr_2015.t1	Thyroglobulin-like protein	U35-theraphotoxin-Cg1a	18	287	ADALEQMSGSSSGDSSHQEKQCRDLRENFDCLWQTSMLKREEQDSNSDV IWKTWRYLGGFCEKYINWWANPCFQRDDIKRCE SRLPSKNSLDDGQSCRMFV NFRDCVTSIASNSCSNSDRSLLGSYFTEKKGKQAWRCPKDSMDTSLPAASAQ QTDRRYPDMYGDSDSSCLVNARTELRCQDRFQNAQSEAMRRDDSDMRN HQLCCGLVAYKECLEGAKEKCGPSDTGRIDNIYKTAESQVKVDCTETAESCK GNGASSIPTNAAAIYFLLYLG YFFSVKTL
-	U-theraphotoxin-Pv45a	Pv_sp_2844.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat protein soc-2 homolog	6	442	APAGCPPADLISPCQCRSFVSAQVKCENVYDLEIVRSALSHRFP HGLRTLHISN SNILVLPDHAFTNISLTRLIDGSNIRQIDEDAFAGQEDLLFSLQNDRLFDVPI SALSRLTQLRALILSDNLLIFLGQDAFADLDHLINLVLRRNRRISRIERG VFPRNL DTLSLSGNLLTTLNRTLIGLSHLSWLFDFDNRLTSLKGELNGLEKLELLSLNN QIPDLED SLGDLHSLEILDVSYNNLHRVGNLSRLSSLKKLDLSFN YFTELES DS FSSLSQLTQLDLSGNQLMTVSLNLYGSLHRLNLSANDLTSLEYEDLKGMSR LRELDLSHNKLNLDGTFGFQSELTVLKLQDNQLKRLHRS LKNLRLDKVLD VRDNQLTTLHTSQMKHNKQLEILEIGGNPLSCDDDHLDVLDL KTRMVKV TGQPF CYLDENTL
-	U-theraphotoxin-Pv57a	Pv_sp_2795.t1	Peptidylglycine alpha-amidating monooxygenase (IPR000720)	Dopamine beta-hydroxylase	14	535	VPDVYVWAVGFSNRGLVTNADFCFLWTDKRGKNQLQDVWV TDEAGYVNVD DHNDCELLNLKRRGHVTRLAWSRKFDTCDPQDYIEDGTTHVVYAVGKGPI RRLEGIRIVNEKHG FQRVHLLKNLAPAPVFPDDTQTITINNDKVHVPAL ETTY WCSLHLLPKGFENKKHIIQYAASI QEGNEPVVHHMEVFHCEVSPEQKLPPWN GPCHSDEKPTVLEACKRVLA AWAMGALPFYYP EEAGLP IGGPDFSRYVMLEV HYNNPELKADWIDSSGITLWYTPTLREFDAGVMELGLE YTDKMAIPAHQESF TLTGVCVSECTRAGLPPEGIVIFGSQLHHTLTGIVVYTKHIRGGQELPELN RDN HYSTHFQEIRFLKRRVRVWPGDALLTTCHYSTMDRQNITLGGFAISDEMCVN YVHYFPKTDLEVCKSSIDSQVLNSYFRYMNQYNDEPTSEDKGISDNYNSIHW S QNNGDFLHQLYYNAPLSMQCNKSSGDRFPGYWE GVPRT EVLYPLPPPKKCC FDKVRNNEDLISAVES

Table S3. Summary of the mature toxins from the merge transcriptome of *Pamphobeteus verdolaga* obtained with the BLAST (Arachnoserver + ToxProt) and HMM (hmmcompete) prediction strategies with odd cysteine number.

Cluster	Given name	sequence_id	HMM family_name	Blast2GO annotation	Cys	Length	Proposed mature sequence
3	U-theraphotoxin-Pv13a (Fragment)	Pv_sp_11560.t1	Thyroglobulin-like protein	Thyroglobulin	11	105	WMLPKCQDDGTFTPMQCYPGTTACMCVAADGSPLTLPGFVNVTAACDCFTE YYKMWLKDEHSPVLP RCADDGTFKPLQCNKAEGVCWCVDKTGRVLTGPSK DTKSC
5	U-theraphotoxin-Pv19a (Fragment)	Pv_sp_11018.t1	Angiotensin-converting Enzyme (IPR033591)	Acetylcholinesterase	3	134	HSHSFHDRDFFPVVTTSTGDIRGKQVNLDGKKVTAFLGIPYAEPVGDQRFKR SVPKQSWSGVYDATKKPPCMQYSTGDFQWTTNSTPSEDCLYNVWVPGKM NFCELESKSKPVLLWIYGGGFLRVNLNRNT
6	U-theraphotoxin-Pv23a (Fragment)	Pv_sp_7347.t1	Venom Kunitz-type family, Long Kunitz domain containing protein (IPR002223;IPR020901;PF00014;)	Tissue factor pathway inhibitor	19	200	TCPGDLYIGDVCSLPKKVGPCRAAMPRIYFNKETGRCEFTFYGGCSGNYNF ETKEQCNSYCFQDKPRYPRDIEICDLDPDRGNCDSRLERYFNRTWKCEKF TSGCGGNRNRFVYLFECERSCPGDIDLGDICSLGLEPGIPGTNISCLALIPRY FNKGSGNCEEFTFGCGGNYNFKTMEECQRFCTMGPPPS
8	U-theraphotoxin-Pv24c (Fragment)	Pv_tr_12866.t1	Tachylectin 5A (IPR002181)	Angiopoietin-1	5	215	NDTTREKECVLSQVDMHLSIAAEFVERARKNVPNDLKGVCCKICPGEKPRD CSDIYKNGHHEDGSYEIFPLSRVMHRPLTVYCDMTKNGGGWTVIQRGDFGR STDYFFQGWDSYKIGFGDVMKDFWIGNDNIFALTNRNNQLRFDLTDWDG NTRYATYDEFWISDDIHNYLHVQGYDGTAGDSFGRHNGHNFTTKDRDND MRSSTNWWSTA
8	U-theraphotoxin-Pv24b (Fragment)	Pv_sp_8847.t1	Tachylectin 5A (IPR002181)	Fibrinogen-like protein 1	7	257	LNLASKMLETARTELNRNDMKQLCQSNSTGNFGCNKWRSSHAPGKPIDCSDI YNDGYHTSGIYQIWPQSKISNGPLVVYCDMEDGGGWTVIQRGEFGNSDDYF YLGWNDYKTSFGHLLREFWIGNDNLFSLTNQRSYQLKVDLTDWEENSKYAIY QEFWIDDEVHNYTLQIKGYNGTARDSMRRHNGNKFSTKDKDNDPWVGGN CAEKHKGAWWYVTCRDSSLNGLYLANSATSDNGVRWYDSKILYHSLKDSV M
8	U-theraphotoxin-Pv32a (Fragment)	Pv_sp_2289.t1	Tachylectin 5A (IPR002181)	Angiopoietin-1	5	288	MADALQVGINTLRANLTDLTNLTRTVYDHTKNSLVTKTYFQSSLQPLMTAKE ENPQFIGCMMQSQEPDERLPRDCKDVQELVENKTGIYRIQPKYATRPIFVYCD METEGGGWTVIQRRRDGSVDLFREWSYKYGFGNVGSEFWLGNENLYLITH QALYELRVLDYDFDDGHAYS KYDGFVAVGSEKEKFMKVLGRLTGDDAGDG MTYHASIPFSTTMDNDRWEGGNCAEDHTGGWWYNQCDASNLNGQYLA GLTPQEYKGVYWHEWQGPNYSLMGTQMMIRPMKH
8	U-theraphotoxin	Pv_sp_798.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-	13	517	IGGGCPINDLKFFLTCKIDSLAASTALLSECLECDRDSLKVDLHTSVRNV MEN VSKRLHLCTTSDLERTVKGILDSKLKTTTDTLQEDISFKLGKVGHQLEDVKQEC GKLNDEEASPSIRRDSHTGVHDIA YSHDTPQELRSGGKHGGDDSGIPKETPGR

	-Pv53a (Fragment)			containing protein 1			IFRKLWRKMTEPINKVGEKIEALAHVVETSNQKHHNETVSRLTRELSSKDKDS EPCTKQLETVAESTKETAQRLGYIESRQLTVQNMCSKILVEVERMRNTVETGK IGIGVGTRLGVTTETLDGAAKPGYEVAKSCAELQEQQIVTDGVYNIKPNGAAA EFLAYCDLTTEGGGWTVIQRGDYGEHLRQNFTQGWDAYKRGFGDFQREF WLGNEKISLLSTQEDVKLRVELEDFDGNNTAYAEYSRFRVADESQQFLLSVGEY QGNATDSLHDKGMFSTEDRDNDDEVSAACCNCADTFKGGWWYYRCFEANL NGPYQTNPTDNGYFLGIIWERWKG DYSLKSSEM KIRPLSFEDVRDP
9	U- theraphotoxin -Pv35a (Fragment)	Pv_sp_6381.t1	Venom Serine protease (IPR001314;IPR00 1254)	Enteropeptidas e	11	321	VCCDLPLVLGENLLRTIEEEKARNRECGTQFPTGYNTSPTEERFQNIYRDIPID RDDQYKYRPPLDFTNYSDFGILVAGGEPATEGQYPWMIAIFKGPTFWCGGTLI DRSHLSAAHCFVNSRDELNPSTDYARVGSIRRNNTVPFKISKIVPHEDYDPRK HYNDIAMLTLECEILTPYVGHCILPDIQLASRDLTGQNVTVLWGDLYYGGP QSRILQRVTVPVVSNQDQNTVYQSMARNSIPQGLTSDFCAGREEGGKDACQ YDSGGPLMHWSEYDYLWTLVGVSFGYNCAVPGYPGVYTRVSSHMDWITRQ ANEV
10	U- theraphotoxin -Pv60a (Fragment)	Pv_sp_59.t1	Protein disulfide- isomerase (IPR005792)	Protein disulfide- isomerase A5	15	684	EMLFKLIEDQDFLAVFFYAENDKESEEAHQLEHIDDDCGEFAIHLVKSSDKI MAKKYGIRNPPGLVLFNRNGQHRYGGDLKDQEEVLEWLINPENVATSDIVEK VNSKMFERLLQRFDYIAVFFYSKIGCKMCNKVLDELEKIDDEAEADGVHIVQI EDHALAKKYGVFAYPALLFFRGEENEPIIYAGDIRSGDRMLDWLLTQKDPSTD YIEEMEGPLPLQNLIDTADHLAVFFYDKHLCSNCDDDRKDAMECEDCQIILDE LENIDDDTDLRHGQFIKTNDLGLAKKYGIKLPALVYEEQQVPSIYEGDLAAE EEVLQWLIQQKSEDTIETVNKEMLEKLIATQYLAVFFYKAHCRACDVALQEL ENIDDDTDLYGIYVVRIDQLQVAKRYGIKTFPALVYFRNGNPLIYDGLKNEE GVLEWLIDDDNRELDPDEITVNLRLMLNKLVEESPFLAVFFYDLNCEYECERVL ELENIDDECDFIDGLVKIFDPEAARQYNVHSVPAVGFFRKQVPMFYDGLDFD EEKLLKWLTSNDVFEIKDEIEEVNRKMLEKLEDFNEFVAVYFYDNNCPKDE ALQELERIDDEADDLEIMFVKIKDPRYSRKFGIAQLPSLVYFRKKFPSIYRGNLL EEDEVLEWLRLKNRYRHPENLNFMYGLGALSLSFILYTVFLVFCFNKNKE
11	U- theraphotoxin -Pv46a (Fragment)	Pv_sp_2488.t1	Protein disulfide- isomerase (IPR005792)	Protein disulfide- isomerase	5	477	AMGIVDYMKQLADPNWKPPAEAVITLTSENFTDAVNAAIILVEFYAPWCG HCKNLAPEYERAARVLKDLPTPIILAKVDATVEKELGDKYEATGYPTLLIFRK GKKYRYEGPRDERGIIFYMKDQAKPVSREVNSYKSLKNSMSKTDVIVGFFNS QFENLYEQYVESADFLRGKLQFFHTFDPQIAKQFGVTTSKIVLYQPEIYSSAYEP SKYEFTDIDGTTDDIKMFYRDHILPLVGERSPKSRWQYQDKYPLVVVYFDVNF SFEHRVQTQLVRKEVAKVAKDFKGQITFAVSNEEDYQDELAALSLDDSGEDV NAAYFASEKARYRMEPVEDFSADELREFVENVQAGNIRRHISQPPKENGK PVISVVGSTFEELVTKSNKDVLLFEYAPWCGFCKKFEPTYKKLGKMF AENDKV IICKIDAAANDYPEQFEVRGFPVYIIPASDKENAIHYEGERDLNALADFVNN QL
12	U- theraphotoxin	Pv_sp_3295.t1	Latrotoxin superfamily, Alpha latrotoxin	Cathepsin K	11	476	EDLGNYSYKVAAYMPDKLGNPIHTCFEVDGNENNTVVIQSILPDLTNFTFV KSVACTSQNGIVTSNTDCELWYEDSYGNKVNRYMYIRKSDRSPVHYIMKG YNTLLGSHYDKYELVYTGYPGNVSDSDFEVHTAGACRSFPGPGVQEMVLN

	-Pv50a (Fragment)		family (IPR002110;IPR020683;IPR013829;P F00023)				NPMQEFINKVDGHTHAADFDDFTSLHEKKYSSQKEQELRKTFIRQNYRFVNSM NRAGLSYYLKINHLADYTDQEIHRIRGRLPKGYNGGKPFKEEFSNDLPDNL DWRLYGAVTQVKDQAVCGSCWSFGTTGTIEGAYFLKTSNLVRLSQQQLIDCS WNFQNNCGDGGEDFRAYQYIMDAGGLASEDDYGSYLGVGDGKCHDKNVTK TAKISGYVNVTSGLSLALRQAIKKGPISVSIDASHKSFSFYSHGVYDSECKN GPDDLHDHSLAVGYGVMNDEPYWIVKNSWSTYWGNDGYVLMSEQDNNCG VETSPTYVIMAD
-	U- theraphotoxin -Pv15a (Fragment)	Pv_sp_8973.t1	Cystatin (IPR027214)	Cystatin	7	108	NVEDDDVVKRIANFVVSENNKQSDSPYCEKLVEVINASTQIVAGINYRITFDTA PTSCLKNDQNCSEMTDCSVLECAPHKRCVANIWSKPWLNSTRIENIEYTERSN SC
-	U- theraphotoxin -Pv16a (Fragment)	Pv_so_1217.t1	Leucine rich peptide (IPR032675)	Zinc finger protein 225	7	110	LAETPAKAGCPRKEDIHPCECLEIPRYPQEGDVQVTETVAFCKTIRNVQVLQN AMKGMQGHVTDFMVLDSCKLPPFPNGLFYNINIKWMEVINSTIQVNEGFFK CASNCW
-	U- theraphotoxin -Pv34a (Fragment)	Pv_so_6686.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeats and immunoglobul in-like domains protein 3	13	308	QASGSNPCSCYYKNSCGCYCEPITWEQFQLLPANFRSCERFTLALRGGTFYSF PPDYFSRVGSRDFALDVGDSKFTDLLDSPVKGVNFDNAAFLRFNNVTVT NSWNWGAFRDLTPTLPLSYCEIQVLYSTVQSLSADFGRICQGSVTVVNVMYSK MATMDDGVFTNFRKLNEVDLSGNKLQSMRRSYFSMPANELETINLSYNNIRS LPNNMFTEMPSLQKVLDLKGNPITTLDETTFRSIFPYVEIIGIEGFPLNCDCRLRW LKEPGQQCGKNLYGLAGAVCNDPTRLRGRSFFNDTLPRDLVC
-	U- theraphotoxin -Pv58a (Fragment)	Pv_tr_11685.t1	Angiotensin- converting Enzyme (IPR033591)	Angiotensin- converting enzyme	11	590	VAAYKFLHENDKVASEMCTKSAIAQWNYASNLTEENKQVMLDTQVLEADF RKETWKNATKFAWKSFKKEPEIYRWFKSLILGNAALPENKLNQLNKLVD MEDIYSKGVCKPQSPKGPCEWSLEPDLTEMMSKSRDYKLLKYIWKSWRDV TGKTVKNDFLKYIELSNEAAKLNFGPDAGVLWRESYDSSTFEDDLEELWETLR PFYQQLHAYVRRKLIHLYTTCNVKNDGPIPAHILGNMWAQWENIMNVVD PPFDKAEIDVTSKMKEKNMTILEMFQISEEFFTSVGLTPMTPEFWNRSIIEKPQD REIVCHASAWDFCDADQRIKMCTKVNMEDLITVHHMGHIEYYLQYAAQQP TVFRDGANPGFHEAVGDVLSVATPDHLKKIGLLDEVNDKDGEIKFLMH MALEKLAFLPFGYLIDQWRWKVFSGEIKPEEMNRKWWELRLKYQGVCPPE RTEDELDAAAKYHVISSVPYIRYFVSTVIQFQFHKALCDAAEYRGLPHKCDIY QNKKAGEVLSTVLSQGSSVPWTEAMGIMTGGVTQKMDASAILEYFDPLTKW LQEKNNKNEFIGWKSDDPMLCPS

Table S4. Summary of the toxin precursors with signal peptide associated sequences, from the merge transcriptome of *Pamphobeteus verdolaga* obtained with the BLAST (Arachnoserver + ToxProt) and HMM (hmmcompete) prediction strategies.

sequence_id	HMM family_name	Blast2GO annotation
Pv_so_352.t1	Huwentoxin-1 family, Jztx 60 subfamily (IPR011696;PF07740;)	NA
Pv_sp_13202.t1	Huwentoxin-1 family, Jztx 36 subfamily (IPR011696;PF07740;)	Kappa-theraphotoxin-Gr1a
Pv_sp_15084.t1	Huwentoxin-1 family, Lectin subfamily (IPR011696;PF07740;)	Kappa-theraphotoxin-Gr1a
Pv_sp_12559.t1	Huwentoxin-1 family, Lectin subfamily (IPR011696;PF07740;)	Kappa-theraphotoxin-Gr1a
Pv_so_347.t1	Venom Kunitz-type family, Native Kunitz toxin subfamily (IPR002223;IPR020901;PF00014;)	Kunitz-type kappaPI-theraphotoxin-Hs1b
Pv_so_222.t1	Spider WAP family, Spider wap 1 family (IPR008197;)	U15-lycotoxin-Ls1d
Pv_sp_14336.t1	Spider WAP family, Spider wap 1 family (IPR008197;)	U14-lycotoxin-Ls1b
Pv_tr_261.t1	MIT-like CsTx-21	Astakine
Pv_sp_12447.t1	Huwentoxin-2 family, TXP1 subfamily (IPR012625;PF08089;)	Omega-theraphotoxin-Ba1c
Pv_tr_2182.t1	Spider WAP family, Spider wap 1 family (IPR008197;)	U15-lycotoxin-Ls1d
Pv_sp_13299.t1	Huwentoxin-1 family, BsTX5 subfamily (IPR011696;PF07740;)	Toxin-like protein 14
Pv_sp_8246.t1	MIT-like CsTx-21	Astakine
Pv_sp_9798.t1	MIT-like AcTx family (IPR020202;PF17556)	Astakine
Pv_so_3402.t1	Leucine rich peptide (IPR032675)	NA
Pv_sp_13292.t1	MIT-like CsTx-21	U33-theraphotoxin-Cg1c
Pv_sp_9171.t1	Huwentoxin-1 family, Lectin subfamily (IPR011696;PF07740;)	Kappa-theraphotoxin-Gr1a
Pv_sp_11881.t1	MIT-like CsTx-21	NA
Pv_so_464.t1	MIT-like AcTx family (IPR020202;PF17556)	U33-theraphotoxin-Cg1c
Pv_so_5544.t1	MIT-like AcTx family (IPR020202;PF17556)	Astakine
Pv_tr_6792.t1	Spider toxin Tx2 family, Spider Tx2 sb1 (IPR004214;PF02950;)	Hainantoxin-XV-3
Pv_sp_12979.t1	AVIT (prokineticin) family (IPR023569;PF06607;)	U34-theraphotoxin-Cg1a
Pv_sp_9651.t1	MIT-like AcTx family (IPR020202;PF17556)	U34-theraphotoxin-Cg1a
Pv_sp_12678.t1	MIT-like CsTx-21	U1-hexatoxin-Iw1e
Pv_so_1872.t1	MIT-like CsTx-22	U34-theraphotoxin-Cg1a
Pv_sp_11357.t1	MIT-like AcTx family (IPR020202;PF17556)	Colipase
Pv_so_2836.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat-containing protein 4B
Pv_tr_10028.t1	Venom Kunitz-type family, Long Kunitz domain containing protein (IPR002223;IPR020901;PF00014;)	Tissue factor pathway inhibitor
Pv_tr_10034.t1	Venom Kunitz-type family, Long Kunitz domain containing protein (IPR002223;IPR020901;PF00014;)	Kunitz-type U19-barytoxin-TI1a
Pv_sp_6867.t1	Venom Serine protease (IPR001314;IPR001254)	Chymotrypsin-like elastase family member 2A
Pv_sp_8677.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-containing protein 1
Pv_sp_7161.t1	Tachylectin 5A (IPR002181)	U33-theraphotoxin-Cg1c
Pv_sp_9105.t1	Tachylectin 5A (IPR002181)	Ficolin-2
Pv_sp_8711.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-containing protein 1
Pv_so_6999.t1	Leucine rich peptide (IPR032675)	Insulin-like growth factor-binding protein complex acid labile subunit

Pv_so_7124.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat-containing G-protein coupled receptor 4
Pv_sp_6615.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat-containing protein 4C
Pv_so_6904.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat and fibronectin type-III domain-containing protein 5
Pv_sp_5116.t1	Leucine rich peptide (IPR032675)	Slit homolog 2 protein
Pv_tr_4644.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat and fibronectin type-III domain-containing protein 4
Pv_sp_3739.t1	Cysteine rich secretory protein type 2	CRISP/Allergen/PR-1
Pv_tr_10255.t1	Peptidylglycine alpha-amidating monooxygenase (IPR000720)	Dopamine beta-hydroxylase
Pv_sp_2598.t1	Huwentoxin-1 family, Hntx 3 subfamily (IPR011696;PF07740;)	Serotransferrin
Pv_tr_12500.t1	Latarcin superfamily, Lt7 family (IPR018802;PF10279;)	Neprilysin
Pv_sp_1860.t1	Latarcin superfamily, Lt7 family (IPR018802;PF10279;)	Endothelin-converting enzyme 1
Pv_sp_1652.t1	Latarcin superfamily, Lt7 family (IPR018802;PF10279;)	Neprilysin
Pv_tr_11735.t1	Venom Serine protease (IPR001314;IPR001254)	Vitamin K-dependent protein C
Pv_tr_7613.t1	Leucine rich peptide (IPR032675)	Toll-like receptor 2
Pv_tr_11818.t1	Venom Serine protease (IPR001314;IPR001254)	Complement C2
Pv_sp_270.t1	Tachylectin 5A (IPR002181)	Collagen alpha-2(I) chain
Pv_so_5188.t1	Tachylectin 5A (IPR002181)	Angiopoietin-1
Pv_sp_5783.t1	Venom Serine protease (IPR001314;IPR001254)	Transmembrane protease serine 11B-like protein
Pv_tr_10029.t1	Venom Kunitz-type family, Long Kunitz domain containing protein (IPR002223;IPR020901;PF00014;)	Tissue factor pathway inhibitor
Pv_so_7554.t1	Leucine rich peptide (IPR032675)	TLR4 interactor with leucine rich repeats
Pv_sp_1472.t1	Leucine rich peptide (IPR032675)	Follicle-stimulating hormone receptor
Pv_sp_1726.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat neuronal protein 3
Pv_sp_2386.t1	Protein disulfide-isomerase (IPR005792)	Protein disulfide-isomerase A6
Pv_sp_4414.t1	Protein disulfide-isomerase (IPR005792)	Protein disulfide-isomerase
Pv_so_5747.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-containing protein 1
Pv_tr_2163.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-containing protein 1
Pv_so_2969.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-containing protein 1
Pv_sp_4498.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-containing protein 1
Pv_tr_15765.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat transmembrane neuronal protein 1

Table S5. Summary of the toxin precursors with pro-peptide associated sequences, from the merge transcriptome of *Pamphobeteus verdolaga* obtained with the BLAST (Arachnoserver + ToxProt) and HMM (hmmcompete) prediction strategies.

sequence_id	HMM family_name	Blast2GO annotation
Pv_sp_13737.t1	Magi-1 superfamily, ICK 7 family (IPR012627;PF08092;)	NA
Pv_sp_2911.t1	Magi-1 superfamily, HWTX XVIc family (IPR012627;PF08092;)	NA
Pv_sp_13425.t1	Helical arthropod neuropeptide derived (HAND) family	Zinc finger protein 2
Pv_sp_7755.t1	Latarcin superfamily, Lt1 family (IPR018802;PF10279;)	NA
Pv_sp_15140.t1	Huwentoxin-1 family, ProTx 1 subfamily (IPR011696;PF07740;)	NA
Pv_tr_4168.t1	Huwentoxin-1 family, F4a subfamily (IPR011696;PF07740;)	NA
Pv_sp_12914.t1	Protein disulfide-isomerase (IPR005792)	Thioredoxin
Pv_sp_4182.t1	Latarcin superfamily, latarcin lt4 typ2 (IPR018802;PF10279;)	NA
Pv_so_7191.t1	Huwentoxin-1 family, Jztx 15 subfamily (IPR011696;PF07740;)	NA
Pv_sp_14895.t1	Huwentoxin-1 family, HpTx1 subfamily (IPR011696;PF07740;)	NA
Pv_tr_16201.t1	cstx38	Zinc finger and BTB domain-containing protein 49
Pv_sp_6690.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Osteoclast-stimulating factor 1
Pv_sp_14524.t1	Cupiennin family, 1 subfamily	NA
Pv_sp_13936.t1	Venom Kunitz-type family, Long Kunitz domain containing protein (IPR002223;IPR020901;PF00014;)	NA
Pv_sp_6028.t1	Huwentoxin-1 family, Jztx 13 subfamily (IPR011696;PF07740;)	NA
Pv_tr_12299.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Integrin-linked protein kinase
Pv_sp_14414.t1	CsTx-20	Diphthamide biosynthesis protein 3
Pv_tr_10321.t1	Latrotoxin superfamily, Delta latroinsectotoxin family	Ankyrin repeat domain-containing protein 54
Pv_tr_10510.t1	Venom Serine protease (IPR001314;IPR001254)	Prothrombin
Pv_so_1499.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat domain-containing protein 65
Pv_tr_7995.t1	Spider agouti family (IPR007733;IPR027300;PF05039;)	NA
Pv_sp_13194.t1	Huwentoxin-1 family, Jztx 36 subfamily (IPR011696;PF07740;)	NA
Pv_so_2810.t1	Huwentoxin-1 family, Jztx 21 subfamily	NA
Pv_sp_9338.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Acyl-CoA-binding domain-containing protein 6
Pv_sp_2895.t1	Huwentoxin-1 family, Hntx 13 subfamily (IPR011696;PF07740;)	NA
Pv_sp_14139.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Myotrophin
Pv_tr_12363.t1	Huwentoxin-1 family, ProTx III subfamily (IPR011696;PF07740;)	NA
Pv_tr_16488.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Ankyrin repeat domain-containing protein 2B
Pv_sp_8040.t1	Spider Agouti	NA
Pv_so_4181.t1	Protein disulfide-isomerase (IPR005792)	Nucleoredoxin
Pv_so_1170.t1	Shiva Omega superfamily, Omega toxin family (IPR009415;PF06357;)	Zinc finger protein 225
Pv_tr_15975.t1	Cysteine rich secretory protein type 0	Golgi-associated plant pathogenesis-related protein 1
Pv_so_3587.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat protein soc-2 homolog
Pv_so_2925.t1	Latrotoxin superfamily, Delta latroinsectotoxin family	Nuclear factor NF-kappa-B p105 subunit

Pv_so_1535.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat and SAM domain-containing protein 3
Pv_so_2617.t1	Protein disulfide-isomerase (IPR005792)	Nucleoredoxin
Pv_so_2795.t1	Venom Serine protease (IPR001314;IPR001254)	Transmembrane protease serine 7
Pv_sp_10463.t1	Protein disulfide-isomerase (IPR005792)	Translationally-controlled tumor protein homolog
Pv_tr_6629.t1	MIT-like CsTx-22	NA
Pv_so_4644.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Protein fem-1 homolog C
Pv_tr_16263.t1	Spider toxin Tx2 family, OAIP 2 subfamily (IPR004214;PF02950;)	NA
Pv_so_4384.t1	Tachylectin 5A (IPR002181)	Angiopoietin-1
Pv_so_2168.t1	Latrotoxin superfamily, Delta latroinsectotoxin family	Serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit B
Pv_tr_10358.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat transmembrane protein FLRT3
Pv_so_2871.t1	Venom Serine protease (IPR001314;IPR001254)	Vitamin K-dependent protein C
Pv_so_5010.t1	Cysteine rich secretory protein type 1 (IPR014044;IPR002413)	GLIPR1-like protein 1
Pv_sp_2976.t1	Omega-agatoxin superfamily, Type II III omega agatoxin family (IPR005853;IPR013605;PF08396;)	NA
Pv_sp_9706.t1	Protein disulfide-isomerase (IPR005792)	Phosducin-like protein 2
Pv_tr_293.t1	Huwentoxin-1 family, Hntx 8 subfamily (IPR011696;PF07740;)	Arginyl-tRNA--protein transferase 1
Pv_sp_7974.t1	Thyroglobulin-like protein	Thyroglobulin
Pv_tr_12046.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_sp_3206.t1	Huwentoxin-1 family, Jztx 9 subfamily (IPR011696;PF07740;)	Zinc finger protein 143
Pv_sp_10034.t1	Cysteine rich secretory protein type 1	Golgi-associated plant pathogenesis-related protein 1
Pv_sp_11473.t1	cstx38	Gastrula zinc finger protein XICGF57.1
Pv_sp_5365.t1	Huwentoxin-1 family, F4b subfamily (IPR011696;PF07740;)	Ubiquitin domain-containing protein 1
Pv_sp_10087.t1	Protein disulfide-isomerase (IPR005792)	Thioredoxin-related transmembrane protein 2
Pv_sp_6233.t1	Latarcin superfamily, latarcin lt4 typ2 (IPR018802;PF10279;)	Electron transfer flavoprotein subunit alpha
Pv_so_6467.t1	Latarcin superfamily, Lt7 family (IPR018802;PF10279;)	Endothelin-converting enzyme 1
Pv_tr_11557.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit C
Pv_tr_12300.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_sp_6882.t1	Protein disulfide-isomerase (IPR005792)	Protein disulfide-isomerase TMX3
Pv_so_4811.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Ankyrin repeat and SOCS box protein 3
Pv_tr_16804.t1	Latrotoxin superfamily, Delta latroinsectotoxin family	Ankyrin repeat and SOCS box protein 13
Pv_tr_2249.t1	cstx38	Zinc finger protein 436
Pv_so_6543.t1	Huwentoxin-1 family, Hntx 9 subfamily (IPR011696;PF07740;)	WD repeat-containing protein 5B
Pv_sp_7373.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_tr_17368.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_so_6587.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat and SOCS box protein 11
Pv_so_6201.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat transmembrane neuronal protein 1
Pv_tr_16681.t1	Venom Serine protease (IPR001314;IPR001254)	Transmembrane protease serine 11B-like protein
Pv_sp_8099.t1	Huwentoxin-1 family, Jztx 21 subfamily	NA
Pv_sp_8012.t1	Huwentoxin-1 family, Hntx 3 subfamily (IPR011696;PF07740;)	FAM8A1

Pv_sp_8234.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-containing protein 1
Pv_tr_15867.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_tr_13675.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit B
Pv_sp_8136.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-containing protein 1
Pv_so_6474.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat and SOCS box protein 7
Pv_tr_8828.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat and SOCS box protein 2
Pv_sp_5082.t1	Protein disulfide-isomerase (IPR005792)	Thioredoxin
Pv_tr_3696.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit B
Pv_sp_7286.t1	Protein disulfide-isomerase (IPR005792)	DnaJ homolog subfamily C member 10
Pv_tr_9561.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Ankyrin-3
Pv_sp_8525.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-containing protein 1
Pv_sp_4874.t1	Magi-1 superfamily, ICK 30 40 family (IPR012627;PF08092;)	Protein real-time
Pv_sp_7694.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-containing protein 1
Pv_sp_180.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Tonsoku-like protein
Pv_sp_4490.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat transmembrane neuronal protein 3
Pv_sp_7366.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat and SOCS box protein 5
Pv_tr_9553.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_sp_5970.t1	CsTx-29	Ubiquitin-conjugating enzyme E2 Q2
Pv_sp_5164.t1	Leucine rich peptide (IPR032675)	Chondroadherin-like protein
Pv_tr_7820.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat and MYND domain-containing protein 2
Pv_tr_10074.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat domain-containing protein 16
Pv_tr_16230.t1	MIT-like AcTx family (IPR020202;PF17556)	Endothelin-converting enzyme 1
Pv_tr_6219.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_sp_3877.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	NF-kappa-B inhibitor cactus
Pv_tr_14031.t1	Cupiennin family, cupiennin typ2	Vacuolar protein sorting-associated protein 8
Pv_tr_2557.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Nephrocystin-3
Pv_sp_2305.t1	Latrotoxin superfamily, Delta latroinsectotoxin family	Ankyrin repeat domain-containing protein 13C
Pv_sp_5234.t1	Shiva kappa superfamily (IPR012499;PF07945;)	Phosphatidylinositol 4-kinase type 2-beta
Pv_sp_4907.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_sp_3683.t1	Protein disulfide-isomerase (IPR005792)	Protein disulfide-isomerase TMX3
Pv_sp_2220.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Ankyrin-3
Pv_tr_9560.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit C
Pv_so_7596.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Integrin-linked protein kinase
Pv_sp_1084.t1	Venom Serine protease (IPR001314;IPR001254)	Prothrombin
Pv_so_7784.t1	Latrotoxin superfamily, Delta latroinsectotoxin family	Serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit B
Pv_tr_9552.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit C
Pv_sp_4749.t1	Protein disulfide-isomerase (IPR005792)	Protein disulfide-isomerase A5
Pv_sp_3775.t1	Leucine rich peptide (IPR032675)	Phenylalanine--tRNA ligase beta subunit

Pv_sp_811.t1	Protein disulfide-isomerase (IPR005792)	Protein disulfide-isomerase
Pv_sp_2149.t1	Latrotoxin superfamily, Delta latroinsectotoxin family	Ankyrin-3
Pv_tr_11868.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit B
Pv_sp_4722.t1	Venom Serine protease (IPR001314;IPR001254)	Inactive serine protease PAMR1
Pv_tr_15236.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat-containing protein 40
Pv_tr_16028.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Protein phosphatase 1 regulatory subunit 12B
Pv_so_7815.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat domain-containing protein 13C
Pv_so_7889.t1	Insecticidal toxin ABC family, Calisoga subfamily (IPR012626;PF08091;)	BRCA1-associated ATM activator 1
Pv_sp_2806.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat, SAM and basic leucine zipper domain-containing protein 1
Pv_sp_2345.t1	Latrotoxin superfamily, Delta latroinsectotoxin family	Chaperone protein ClpB
Pv_tr_4893.t1	Leucine rich peptide (IPR032675)	Leucine-rich repeat protein soc-2 homolog
Pv_tr_4993.t1	Leucine rich peptide (IPR032675)	Insulin-like growth factor-binding protein complex acid labile subunit
Pv_tr_9244.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	SH3 and multiple ankyrin repeat domains protein 3
Pv_tr_16673.t1	Leucine rich peptide (IPR032675)	Platelet glycoprotein V
Pv_sp_1011.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat and IBR domain-containing protein 1
Pv_sp_1671.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Protein fem-1 homolog C
Pv_so_8281.t1	Tachylectin 5A (IPR002181)	Endothelin-converting enzyme 1
Pv_sp_2016.t1	Latarcin superfamily, Lt7 family (IPR018802;PF10279;)	Endothelin-converting enzyme 1
Pv_tr_4977.t1	Peptidylglycine alpha-amidating monooxygenase (IPR000720)	Endothelin-converting enzyme 1
Pv_tr_9073.t1	Venom Kunitz-type family, Long Kunitz domain containing protein (IPR002223;IPR020901;PF00014;)	Papilin
Pv_tr_15777.t1	Latarcin superfamily, Lt7 family (IPR018802;PF10279;)	Endothelin-converting enzyme 1
Pv_sp_1844.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Neprilysin
Pv_tr_5050.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Endothelin-converting enzyme 1
Pv_tr_1311.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Protein phosphatase 1 regulatory subunit 12A
Pv_sp_965.t1	Spider Agouti	Solute carrier organic anion transporter family member 1A5
Pv_sp_1085.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Protein phosphatase 1 regulatory subunit 12B
Pv_tr_15800.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Histone-lysine N-methyltransferase SUV39H2
Pv_sp_807.t1	Latrotoxin superfamily, Delta latroinsectotoxin family	Apoptosis-stimulating of p53 protein 1
Pv_tr_305.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Death-associated protein kinase 1
Pv_sp_1095.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Oxysterol-binding protein-related protein 1
Pv_tr_17643.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit C
Pv_tr_16469.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Histone-lysine N-methyltransferase SUV39H2
Pv_sp_885.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_so_8457.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Inhibitor of Bruton tyrosine kinase
Pv_sp_431.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Ankyrin-3
Pv_tr_15558.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_sp_359.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_sp_364.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Protein TANC2

Pv_tr_5723.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Kinesin light chain 4
Pv_tr_3655.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Poly [ADP-ribose] polymerase 1
Pv_sp_63.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_tr_10178.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Ankyrin-3
Pv_sp_4.t1	Latrotoxin superfamily, Delta latroinsectotoxin family	Ankyrin-3

Table S6. Summary of the toxin precursors with neither signal or pro-peptide associated sequences, from the merge transcriptome of *Pamphobeteus verdolaga* obtained with the BLAST (Arachnoserver + ToxProt) and HMM (hmmcompete) prediction strategies.

sequence_id	HMM family_name	Blast2GO annotation
Pv_sp_4102.t1	Huwentoxin-1 family, AU5B subfamily (IPR011696;PF07740;)	NA
Pv_tr_13769.t1	Magi-1 superfamily, ICK 30 40 family (IPR012627;PF08092;)	NA
Pv_tr_726.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Myotrophin
Pv_so_1314.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Ankyrin repeat domain-containing protein 29
Pv_sp_15275.t1	Huwentoxin-1 family, Jztx F5 subfamily (IPR011696;PF07740;)	NA
Pv_sp_15666.t1	Huwentoxin-1 family, ProTx 1 subfamily (IPR011696;PF07740;)	Neprilysin
Pv_tr_15994.t1	CsTx-35	Ferredoxin-dependent glutamate synthase
Pv_tr_6775.t1	Protein disulfide-isomerase (IPR005792)	Protein disulfide-isomerase A3
Pv_tr_9551.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit B
Pv_sp_12669.t1	Huwentoxin-1 family, ProTx 1 subfamily (IPR011696;PF07740;)	NA
Pv_so_7116.t1	Spider toxin Tx3-6 family	NA
Pv_so_743.t1	Huwentoxin-1 family, GrTx subfamily (IPR011696;PF07740;)	NA
Pv_sp_13021.t1	Protein disulfide-isomerase (IPR005792)	Thioredoxin
Pv_sp_13996.t1	Huwentoxin-1 family (IPR011696;PF07740;)	U11-theraphotoxin-Cg1b
Pv_so_1664.t1	Thyroglobulin-like protein	Insulin-like growth factor-binding protein 5
Pv_so_2505.t1	Latarcin superfamily, Lt7 family (IPR018802;PF10279;)	NA
Pv_tr_2354.t1	Protein disulfide-isomerase (IPR005792)	Protein disulfide-isomerase
Pv_so_3857.t1	Latarcin superfamily, Lt6 family (IPR018802;PF10279;)	NA
Pv_so_3471.t1	Huwentoxin-1 family, ProTx 1 subfamily (IPR011696;PF07740;)	Endothelin-converting enzyme 1
Pv_tr_638.t1	Huwentoxin-1 family, ScTx1 subfamily (IPR011696;PF07740;)	Protein O-mannose kinase
Pv_tr_11130.t1	Angiotensin-converting Enzyme (IPR033591)	Angiotensin-converting enzyme
Pv_tr_4717.t1	Venom Serine protease (IPR001314;IPR001254)	Plasma kallikrein
Pv_sp_12615.t1	Magi-5 family, Omega atracotoxin type 2 family (IPR012628;IPR013139;PF08093;)	NA
Pv_so_4240.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat domain-containing protein 39
Pv_so_4504.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin repeat domain-containing protein 39
Pv_sp_5251.t1	Signal Peptidase (IPR001733)	Signal peptidase complex catalytic subunit SEC11
Pv_tr_10035.t1	Tachylectin 5A (IPR002181)	Fibrinogen C domain-containing protein 1
Pv_tr_3301.t1	Delta-atracotoxin family (IPR008017;PF05353;)	Transposable element Tcb1 transposase

Pv_sp_10768.t1	Insecticidal toxin ABC family, Calisoga subfamily (IPR012626;PF08091;)	NA
Pv_tr_5818.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_sp_9101.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Integrin-linked protein kinase
Pv_sp_8418.t1	Leucine rich peptide (IPR032675)	U2 small nuclear ribonucleoprotein A
Pv_sp_8686.t1	Latrotoxin superfamily, Alpha latroinsectotoxin family (IPR002110;IPR020683;PF00023)	Serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit C
Pv_tr_16664.t1	Huwentoxin-2 family, TXP1 subfamily (IPR012625;PF08089;)	Protein suppressor of hairy wing
Pv_sp_6602.t1	Angiotensin-converting Enzyme (IPR033591)	Acetylcholinesterase
Pv_tr_17006.t1	Cstx-37	RNA-directed DNA polymerase from mobile element jockey
Pv_tr_5896.t1	Latarcin superfamily, Lt7 family (IPR018802;PF10279;)	Endothelin-converting enzyme 1
Pv_tr_6699.t1	Latrotoxin superfamily, Alpha latrotoxin family (IPR002110;IPR020683;IPR013829;PF00023)	Ankyrin repeat and SOCS box protein 2
Pv_sp_4842.t1	Protein disulfide-isomerase (IPR005792)	Glutaredoxin-3
Pv_so_7311.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Ankyrin-3
Pv_tr_9705.t1	Venom Serine protease (IPR001314;IPR001254)	Prostasin
Pv_sp_2780.t1	Leucine rich peptide (IPR032675)	Insulin-like growth factor-binding protein complex acid labile subunit
Pv_so_7402.t1	Double-knot toxin subfamily	Dynein assembly factor with WDR repeat domains 1
Pv_sp_3698.t1	Shiva kappa superfamily (IPR012499;PF07945;)	Phosphatidylinositol 4-kinase type 2-beta
Pv_sp_3431.t1	Latrotoxin superfamily, Alpha latrocrustotoxin family (IPR002110;IPR020683;PF00023)	Speckle-type POZ protein
Pv_tr_2037.t1	Latarcin superfamily, Lt7 family (IPR018802;PF10279;)	Myocardin
Pv_tr_10546.t1	Protein disulfide-isomerase (IPR005792)	Endothelin-converting enzyme 1
Pv_tr_6330.t1	Leucine rich peptide (IPR032675)	Thyroid peroxidase