

Table S1 mRNA expression of 9 glycosyltransferase genes induced by class 12 acetolactate synthase (ALS) inhibitor herbicides

Chemical compounds	Time (h)	MdUGT 73B36	MdUGT 73B37	MdUGT 73B38	MdUGT 73B39	MdUGT 73B40	MdUGT 73CG21	MdUGT 73CG22	MdUGT 73CP3	MdUGT 73AC7	
Bensulfuron methyl	0	1.00 ± 0.102	1.00 ± 0.107	1.00 ± 0.114	1.00 ± 0.105	1.00 ± 0.114	1.00 ± 0.109	1.00 ± 0.110	1.00 ± 0.102	1.00 ± 0.097	
		2.487 ± 0.249*	2.573 ± 0.284*	2.629 ± 0.218*	2.545 ± 0.197*	2.397 ± 0.183*	4.856 ± 0.378**	6.901 ± 0.425**	3.317 ± 0.243*	1.593 ± 0.227	
	3	3.592 ± 0.317*	3.104 ± 0.295*	3.263 ± 0.226*	4.183 ± 0.284*	4.682 ± 0.275*	6.294 ± 0.391**	7.461 ± 0.438**	4.207 ± 0.269*	3.214 ± 0.257*	
		2.861 ± 0.232*	3.585 ± 0.273*	2.758 ± 0.229*	3.759 ± 0.315*	3.206 ± 0.227*	5.191 ± 0.326*	5.698 ± 0.394**	3.583 ± 0.224*	2.475 ± 0.212*	
	6	1.576 ± 0.085	2.408 ± 0.021*	2.174 ± 0.236*	2.103 ± 0.128	3.083 ± 0.194*	3.958 ± 0.327*	4.206 ± 0.332*	3.106 ± 0.218*	2.196 ± 0.184*	
		1.00 ± 0.108	1.00 ± 0.112	1.00 ± 0.124	1.00 ± 0.117	1.00 ± 0.131	1.00 ± 0.121	1.00 ± 0.109	1.00 ± 0.113	1.00 ± 0.118	
	12	3.594 ± 0.284*	5.302 ± 0.312*	6.394 ± 0.407**	5.390 ± 0.295*	4.495 ± 0.267*	8.683 ± 0.462**	16.289 ± 0.353**	6.283 ± 0.451**	5.253 ± 0.474**	
		5.275 ± 0.391**	7.498 ± 0.472**	5.192 ± 0.383**	4.298 ± 0.296*	3.587 ± 0.385**	10.475 ± 0.571**	27.475 ± 0.624**	8.496 ± 0.538**	5.968 ± 0.472**	
	24	5.478 ± 0.218*	6.114 ± 0.294*	3.576 ± 0.177*	3.174 ± 0.195*	2.576 ± 0.326*	7.362 ± 0.298*	22.287 ± 0.312*	7.365 ± 0.283*	6.028 ± 0.197*	
		4.372 ± 0.329*	4.084 ± 0.276**	2.057 ± 0.215*	2.945 ± 0.195*	2.108 ± 0.226*	5.476 ± 0.321*	18.488 ± 0.274*	6.274 ± 0.325*	4.294 ± 0.269*	
	Nicosulfuron	0	1.00 ± 0.102	1.00 ± 0.089	1.00 ± 0.091	1.00 ± 0.113	1.00 ± 0.121	1.00 ± 0.107	1.00 ± 0.105	1.00 ± 0.124	1.00 ± 0.116
			2.498 ± 0.203*	3.108 ± 0.227*	3.506 ± 0.324*	2.475 ± 0.193*	4.059 ± 0.272*	5.867 ± 0.393**	9.275 ± 0.611**	7.593 ± 0.526**	5.968 ± 0.341**
3		3.104 ± 0.202*	4.285 ± 0.271*	4.967 ± 0.314*	2.183 ± 0.156	5.290 ± 0.494**	6.193 ± 0.452**	13.573 ± 0.675**	10.437 ± 0.518**	4.677 ± 0.305*	
		3.587 ± 0.226*	5.227 ± 0.313*	3.264 ± 0.237*	1.941 ± 0.106	3.924 ± 0.191*	7.958 ± 0.425**	10.486 ± 0.608**	7.079 ± 0.436**	3.86 ± 0.284*	
6		1.951 ± 0.104	3.296 ± 0.192*	2.813 ± 0.175	1.756 ± 0.126	2.856 ± 0.174	4.204 ± 0.309*	7.497 ± 0.516**	5.398 ± 0.347**	2.913 ± 0.206*	
		1.00 ± 0.109	1.00 ± 0.105	1.00 ± 0.102	1.00 ± 0.095	1.00 ± 0.097	1.00 ± 0.099	1.00 ± 0.101	1.00 ± 0.112	1.00 ± 0.106	
12		1.958 ± 0.116	2.057 ± 0.184*	3.912 ± 0.253*	3.205 ± 0.157	2.497 ± 0.195*	3.576 ± 0.264*	4.587 ± 0.295*	3.857 ± 0.291*	3.595 ± 0.246*	
		2.475 ± 0.206*	3.186 ± 0.292*	5.364 ± 0.427**	4.592 ± 0.314*	3.185 ± 0.196*	3.958 ± 0.257*	5.920 ± 0.475**	3.184 ± 0.246*	4.952 ± 0.395**	
24		3.049 ± 0.273*	4.208 ± 0.377**	6.721 ± 0.426**	5.365 ± 0.348**	3.596 ± 0.207*	4.697 ± 0.394**	4.867 ± 0.326**	2.172 ± 0.195*	2.954 ± 0.212*	
		2.176 ± 0.176	3.756 ± 0.176	4.598 ± 0.176	6.358 ± 0.176	3.284 ± 0.176	3.458 ± 0.176	4.103 ± 0.176	1.485 ± 0.176	2.193 ± 0.176	

Metsulfuron	0	0.225*	0.298*	0.342**	0.487**	0.192*	0.242*	0.375**	0.107	0.214*
		1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±
		0.095	0.098	0.112	0.114	0.112	0.109	0.106	0.103	0.089
	3	2.986 ±	3.586 ±	4.598 ±	3.943 ±	4.523 ±	3.598 ±	5.393 ±	3.718 ±	2.746 ±
		0.224*	0.312*	0.389**	0.316*	0.328*	0.314*	0.407**	0.307*	0.224*
	6	3.697 ±	4.592 ±	3.576 ±	4.695 ±	3.209 ±	3.193 ±	6.892 ±	2.905 ±	2.403 ±
		0.313*	0.339**	0.284*	0.397**	0.247*	0.225*	0.416**	0.217*	0.211*
	12	2.465 ±	5.258 ±	4.052 ±	3.291 ±	2.985 ±	2.857 ±	5.304 ±	2.164 ±	1.725 ±
		0.178*	0.472**	0.345**	0.283*	0.226*	0.279*	0.264**	0.172*	0.153
	24	1.758 ±	3.591 ±	2.527 ±	2.476 ±	1.756 ±	2.475 ±	3.068 ±	1.957 ±	1.590 ±
		0.126	0.197*	0.173*	0.192*	0.086	0.158*	0.247*	0.139	0.103
	0	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±
		0.101	0.114	0.118	0.112	0.093	0.095	0.097	0.102	0.105
	3	3.194 ±	2.457 ±	1.598 ±	3.967 ±	2.941 ±	2.847 ±	4.596 ±	4.209 ±	5.212 ±
		0.287*	0.205*	0.117	0.286*	0.254*	0.212*	0.339**	0.327*	0.356**
	6	4.875 ±	3.269 ±	2.587 ±	5.182 ±	4.952 ±	3.492 ±	5.291 ±	3.586 ±	3.298 ±
		0.384**	0.291*	0.216*	0.317*	0.338**	0.286*	0.299*	0.312*	0.300*
Triasulfuron	12	2.986 ±	2.173 ±	3.736 ±	4.295 ±	3.687 ±	3.103 ±	3.059 ±	2.375 ±	2.985 ±
		0.183*	0.179*	0.242*	0.309*	0.273*	0.295*	0.178*	0.168*	0.217*
	24	2.473 ±	2.048 ±	2.592 ±	3.698 ±	3.139 ±	2.171 ±	2.506 ±	2.109 ±	2.174 ±
		0.195*	0.181*	0.213*	0.226*	0.295*	0.204*	0.194*	0.183*	0.169*
	0	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±
		0.126	0.118	0.115	0.113	0.109	0.110	0.101	0.098	0.104
	3	4.295 ±	3.941 ±	5.282 ±	4.287 ±	3.953 ±	3.917 ±	4.576 ±	3.961 ±	3.738 ±
		0.371**	0.312*	0.420**	0.323*	0.297*	0.248*	0.374**	0.392*	0.329*
	6	5.957 ±	3.276 ±	3.953 ±	3.952 ±	3.274 ±	3.094 ±	5.689 ±	3.295 ±	2.584 ±
		0.414**	0.293*	0.317*	0.287*	0.306*	0.232*	0.513**	0.319*	0.209**
	12	3.541 ±	2.478 ±	3.747 ±	3.648 ±	2.792 ±	2.479 ±	4.275 ±	2.472 ±	2.103 ±
		0.272*	0.220*	0.295*	0.262*	0.245*	0.216*	0.335**	0.224*	0.182*
	24	3.208 ±	2.103 ±	3.029 ±	3.209 ±	2.165 ±	2.153 ±	3.136 ±	2.109 ±	1.712 ±
		0.271*	0.192*	0.325*	0.247*	0.197*	0.204*	0.295*	0.157*	0.143
Cinosulfuron	0	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±
		0.112	0.115	0.108	0.114	0.109	0.110	0.113	0.121	0.117
	3	4.495 ±	5.067 ±	3.587 ±	4.693 ±	4.142 ±	3.673 ±	4.593 ±	3.103 ±	2.757 ±
		0.325*	0.419**	0.272*	0.401**	0.275*	0.322*	0.373**	0.227*	0.206*
	6	3.957 ±	3.953 ±	2.746 ±	3.405 ±	2.498 ±	2.487 ±	3.193 ±	2.164 ±	2.536 ±
		0.328*	0.291*	0.224*	0.325*	0.229*	0.195*	0.225*	0.127*	0.159*
	12	3.162 ±	3.714 ±	2.293 ±	2.381 ±	2.103 ±	2.212 ±	2.597 ±	1.475 ±	2.183 ±
		0.217*	0.302*	0.206*	0.236*	0.179*	0.184*	0.210*	0.126	0.194*
	24	2.373 ±	2.673 ±	1.305 ±	2.049 ±	1.325 ±	1.475 ±	2.104 ±	1.028 ±	1.472 ±
		0.225*	0.245*	0.184	0.197*	0.102	0.136	0.198*	0.113	0.157
Sulfometuron	0	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±
		0.108	0.114	0.112	0.109	0.110	0.106	0.111	0.108	0.105
	3	2.489 ±	2.967 ±	3.638 ±	2.574 ±	2.579 ±	3.952 ±	4.476 ±	3.113 ±	2.465 ±

		0.184 <sup>*</sup>	0.219 <sup>*</sup>	0.247 <sup>*</sup>	0.195 <sup>*</sup>	0.206 <sup>*</sup>	0.324 <sup>*</sup>	0.308 <sup>*</sup>	0.235 <sup>*</sup>	0.213 <sup>*</sup>		
Pyrazosulfu ron	6	1.487 ±	2.572 ±	2.954 ±	2.135 ±	2.163 ±	3.174 ±	3.102 ±	2.712 ±	2.104 ±		
		0.105	0.225 <sup>*</sup>	0.236 <sup>*</sup>	0.189 <sup>*</sup>	0.195 <sup>*</sup>	0.228 <sup>*</sup>	0.274 <sup>*</sup>	0.225 <sup>*</sup>	0.125 <sup>*</sup>		
	12	1.264 ±	2.469 ±	2.746 ±	1.846 ±	1.765 ±	2.533 ±	2.528 ±	2.384 ±	1.675 ±		
		0.117	0.192 <sup>*</sup>	0.227 <sup>*</sup>	0.158	0.154	0.252 <sup>*</sup>	0.212 <sup>*</sup>	0.225 <sup>*</sup>	0.119		
	24	1.141 ±	2.103 ±	2.429 ±	1.457 ±	1.354 ±	2.106 ±	2.294 ±	1.948 ±	1.382 ±		
		0.103	0.192 <sup>*</sup>	0.213 <sup>*</sup>	0.136	0.121	0.175 <sup>*</sup>	0.193 <sup>*</sup>	0.166	0.121		
	0	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±		
		0.112	0.115	0.109	0.106	0.107	0.110	0.094	0.096	0.098		
	3	3.193 ±	4.285 ±	3.853 ±	2.048 ±	2.375 ±	2.598 ±	3.751 ±	3.105 ±	2.968 ±		
		0.271 <sup>*</sup>	0.336 <sup>**</sup>	0.292 <sup>*</sup>	0.164 <sup>*</sup>	0.201 <sup>*</sup>	0.324 <sup>*</sup>	0.327 <sup>*</sup>	0.253 <sup>*</sup>	0.283 <sup>*</sup>		
	6	4.284 ±	3.162 ±	3.476 ±	1.574 ±	2.103 ±	2.346 ±	4.548 ±	1.752 ±	2.457 ±		
		0.306 <sup>*</sup>	0.291 <sup>*</sup>	0.269 <sup>*</sup>	0.126	0.184 <sup>*</sup>	0.205 <sup>*</sup>	0.320 <sup>*</sup>	0.154	0.213 <sup>*</sup>		
	12	3.481 ±	2.476 ±	3.102 ±	1.395 ±	1.358 ±	2.104 ±	2.958 ±	1.534 ±	2.182 ±		
0.292 <sup>*</sup>		0.263 <sup>*</sup>	0.274 <sup>*</sup>	0.113	0.125	0.176 <sup>*</sup>	0.225 <sup>*</sup>	0.137	0.175 <sup>*</sup>			
24	2.958 ±	2.103 ±	2.174 ±	1.202 ±	1.249 ±	1.467 ±	2.472 ±	1.372 ±	1.563 ±			
	0.253 <sup>*</sup>	0.185 <sup>*</sup>	0.192 <sup>*</sup>	0.103	0.115	0.138	0.213 <sup>*</sup>	0.115	0.147			
0	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±			
	0.105	0.102	0.112	0.114	0.117	0.121	0.125	0.116	0.118			
Rimsulfuro n	3	3.597 ±	2.453 ±	2.587 ±	3.116 ±	2.498 ±	3.587 ±	3.759 ±	3.285 ±	2.574 ±		
		0.285 <sup>*</sup>	0.221 <sup>*</sup>	0.209 <sup>*</sup>	0.237 <sup>*</sup>	0.223 <sup>*</sup>	0.336 <sup>*</sup>	0.294 <sup>*</sup>	0.246 <sup>*</sup>	0.209 <sup>*</sup>		
	6	4.483 ±	3.198 ±	2.140 ±	2.585 ±	2.102 ±	2.954 ±	3.106 ±	2.954 ±	2.148 ±		
		0.317 <sup>*</sup>	0.296 <sup>*</sup>	0.182 <sup>*</sup>	0.199 <sup>*</sup>	0.164 <sup>*</sup>	0.182 <sup>*</sup>	0.274 <sup>*</sup>	0.278 <sup>*</sup>	0.195 <sup>*</sup>		
	12	5.648 ±	2.284 ±	1.483 ±	2.147 ±	1.365 ±	2.463 ±	2.587 ±	2.756 ±	1.476 ±		
		0.427 <sup>**</sup>	0.228 <sup>*</sup>	0.135	0.186 <sup>*</sup>	0.126	0.217 <sup>*</sup>	0.226 <sup>*</sup>	0.249 <sup>*</sup>	0.139		
	24	3.174 ±	1.035 ±	1.205 ±	1.934 ±	1.241 ±	2.212 ±	2.142 ±	2.392 ±	1.291 ±		
		0.225 <sup>*</sup>	0.108	0.157	0.165	0.113	0.148 <sup>*</sup>	0.183 <sup>*</sup>	0.193 <sup>*</sup>	0.115		
	0	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±	1.00 ±		
		0.109	0.112	0.109	0.114	0.112	0.106	0.095	0.098	0.097		
	3	2.498 ±	2.962 ±	3.593 ±	4.235 ±	3.594 ±	4.206 ±	5.205 ±	4.698 ±	3.574 ±		
		0.205 <sup>*</sup>	0.217 <sup>*</sup>	0.236 <sup>*</sup>	0.293 <sup>*</sup>	0.225 <sup>*</sup>	0.326 <sup>*</sup>	0.417 <sup>**</sup>	0.308 <sup>*</sup>	0.371 <sup>*</sup>		
	Ethametsulf uron	6	3.194 ±	4.681 ±	5.673 ±	3.597 ±	4.182 ±	3.384 ±	4.746 ±	3.567 ±	2.473 ±	
			0.283 <sup>*</sup>	0.305 <sup>*</sup>	0.401 <sup>**</sup>	0.312 <sup>*</sup>	0.381 <sup>**</sup>	0.347 <sup>**</sup>	0.358 <sup>**</sup>	0.251 <sup>*</sup>	0.228 <sup>*</sup>	
		12	2.971 ±	3.587 ±	3.275 ±	3.104 ±	2.053 ±	2.915 ±	3.179 ±	3.193 ±	2.145 ±	
0.283 <sup>*</sup>			0.245 <sup>*</sup>	0.221 <sup>*</sup>	0.273 <sup>*</sup>	0.152 <sup>*</sup>	0.238 <sup>*</sup>	0.225 <sup>*</sup>	0.253 <sup>*</sup>	0.182 <sup>*</sup>		
24		2.752 ±	2.583 ±	2.597 ±	2.953 ±	1.427 ±	1.759 ±	2.487 ±	2.576 ±	1.847 ±		
		0.226 <sup>*</sup>	0.218 <sup>*</sup>	0.232 <sup>*</sup>	0.194 <sup>*</sup>	0.101	0.112	0.124	0.136	0.129		

Table S2 Gene Primers

Gene name	Primer sequence	Function
MdUGT73B36	F: GTCGAAATCAAAACCATC	For Real-time PCR
	R: ACTTTGCAGCTGCATCAG	
MdUGT73B37	F: GGAGAAAGAGGATTGGCTG	For Real-time PCR
	R: CTCGTTGTAAACTGCTCC	
MdUGT73B38	F: TAGGATGGAAGGGAAAGG	For Real-time PCR
	R: CCATTTTTGAGCACCAAC	
MdUGT73B39	F: GACACGAGCCCAAGTTCC	For Real-time PCR
	R: GCTTTCATCCCAAGCACG	
MdUGT73B40	F: GCTGAGAAAACGAGCTATGG	For Real-time PCR
	R: TGAATTTAGCCATGCTTCC	
MdUGT73CG21	F: GGAGGGTTCTTAACACACTG	For Real-time PCR
	R: CACCAACACCCCAATCTTC	
MdUGT73CG22	F: CCATCGTCACTACGCAGCAC	For Real-time PCR
	R: CTTCTCTGCTTGTTGTTGC	
MdUGT73CP3	F: TCTAGACCTCCTGCTTCATATATGAT	For Real-time PCR
	R: GGATCCCTCCTCTCCTTAGTTTGTCTG	
MdUGT73CR7	F: GGATTGCAGATGTCATAAC	For Real-time PCR
	R: CACTCTAGAGCCTCATTGAG	
MdUGT73CG22	F: GGATCCATGATATTCTATCCATCC	Full-length gene amplification
	R: GAATTCTTAGTTTGTCTGTCTG	

Table S3 Nucleotide and amino acid sequences of MdUGT73CG22

## cDNA sequences

AGGAAGCAAGTTATGTGAAGTGGCTAAACAGAGTCCACATAACTGAGTAGAGTGAAAT  
 GTTAGGATAAGAACACCAATAAATTTGTAAGCTCTCACGTCAGCAGCGGCAAATTGCAT  
 CATTGTCCCGTAGCAAGAGAGAGATGCTATATCCCTCGAGTAACAAGCGAACCTCCTG  
 CTTTCATAT**ATG**ATATTCTATCCATCCAATTTTCTTCCCAATACCATGGCGTCCGGAGAGCC

CCAGCTTCACTTTGTTATGTTTCCTTTCATGGCCCAAGGCCACATGATACCCATGATCGA  
CATCGCTAGACTCTTGCGCAAAGAGGCATCATCATCACCATCGTCACTACGCAGCAC  
AATGCGGCGCGATTTCAAAACGTTTTGACTCGTGCTGTGCAGTCGGGCCTCCAAATGA  
GGGTAGCCCTACTAGAATTTCCATGCGAAAAAGCGGGGTGCCTGCTGGGTGTGAGAA  
CCTTGACCTGCTTCCGTTCGCATGGATTGGCGGCGCACTTCTTTTTTGCAACGGGTCTGT  
TGCAACAACAAGCAGAGAAGTTGTTTGAAGAGTTAACCCCCGAGCCAAGCTGCATATT  
CTCCGATATGTGTTTTCCGTGGACGGTGAAAATTTCCCACAAGTTTAACATTCCAAGGA  
TATCTTTCAGTGGATTCTGCACATTTTGTCTCCTTTGCATTAACAACTTCAGGCGTCGA  
AAGTTCATGAGAATTTAAGCTCTGAAACGGAGTACTTTGTTGTGCCTGACTTGCCTGAT  
CGAATTGAGGCCACGAAAGCTCAGCTGCCAGGCCCTGACTCCAAGTATGTCAGGGT  
TTTTGGATAAAATTGTTGCAGCTGAATTGGAACATTTGGGATAATCATGAATACTTTTG  
AAGAGTTGGAGCCGGCATATATTGAAGCGTACAAGAAGACGGCGAAAGTCTGGTGCAT  
TGGCCCAGCTTCACTGAGCAACAAAGATGACTTGGACAAGGCGCAGAGGGGTAACAA  
GGCCTCCATTGATGAACAGCACTGCTTGAAGTGGCTTGATTCTTGGGAACCAAGTTCT  
GTAATTTATGCTTGCCTCGGAAGTTTATGCAATCTTGTGTGTGAACAATTGATAGAGCTT  
GGACTGGCCTTAGAGGCATCGAACAAAACGTTCAATTTGGGTTGTAAGGGGATGCAGTC  
AATCAGAAGAGTTGGAAAAATGGATTTCTGAGAGTGAATTTGAAGAAAGAACGAAGG  
GAAGGAGCCTCGTTATTTGGGGATGGGCTCCGCAAACACTCATATTGTCACACCGTGC  
AGTTGGGGGGTTCTTAACACATTGTGGATGGAACCTCGATAATGGAAGGGATATGTGCCG  
GGCTGCCCTTGATCACATGGCCACTGTTTGGGGACCAGTTCCTTAATGAAAACTAGTT  
GTGCAGGTTCTTAAAATTGCGGTGAGCGTTGGGGTGGAGTATCCGGTAAAGTGGGGAG  
AGGAAGAGAAGATTGGCGTGCTGGTGAAAAGGGAAAATGTAACAAAAGCGATAGAG  
AAGGTGATGGATGGAGAAGAAAGTGAAGGGAGAAGAGAGAGAGCCAGAGAGTTTGG  
AGAGATGGCAAAGAGAGCAGCAGAAGAAGGAGGATCGTCTCACGTCAACGTTTCACA  
GCTTATCCAAGATATCGTGCAACAAAGTAGTAATGGCAGACAGACAAACTAAGGAGAG  
GAGAATACAAGGGACTTGCTGCTCCATCTCAACTGAAAGAGCTTCTTGTCTCATGTACT  
GTAAACATGTCATTTGTTGCAAAATTAGTTTTCTTTTCTTTTCTTCTCTGTAGATTTAT  
ACTTCAGAAACAATTGATACACCTGCTTTACTTA

Amino acid sequences

MIFYPSNFLPNTMASGEPQLHFVMFPFMAQGHMIPMIDIARLLAQRGIIITIVTTQHNAARF  
QNVLTRAVQSGLQMRVALLEFPCEKAGLPAGCENLDLLPSHGLAAHFFFATGLLQQQAEK  
LFEELTEPSCIFSDMCFPWTVKISHKFNIPRISFSGFCTFCLLCINKLQASKVHENLSSETEY  
FVVPDLPDRIEATKAQLPGPLTPSMGFLDKIVAAELETFGIIMNTFEELEPAYIEAYKKTAK  
VWCIGPASLSNKDDLDKAQRGNKASIDEQHCLKWLDSWEPSSVIYACLGSLCNLVCEQLI  
ELGLALEASNKTFIWVVRGCSQSEELEKWISESEFEERTKGRSLVIWGWAPQTLILSHRAV  
GGFLTHCGWNSIMEGICAGLPLITWPLFGDQFLNEKLVVQVLKIAVSVGVEYPVKWGEEE  
KIGVLVKRENVTKAIEKVMDGEESEGRRERAREFGEMAKRAAEEGGSSHVNVSQLIQDIV  
QQSSNGRQTN