

Table S1. The median lethal concentration (LC₅₀) values of CPF for *P. akamusi* larvae at different time points (n=30)

Exposure time (h)	Toxicity regression equation	Lethal concentration 50% (LC ₅₀ , µg/l)	95% confidence interval (µg/l)	Correlation coefficient
24	y=0.431x-1.638	6304.862	[2.874,11.222]	0.644
48	y=0.497x-1.296	403.59	[2.187,3.938]	0.807
72	y=0.801x-01.175	29.334	[1.170,1.686]	0.666
96	y=0.977x-1.133	14.425	[0.846,1.368]	0.660

Table S2.Detailed information with regard to P450 genes retrieved from *P. akamusi*.

Clan	Gene ID	Name	Chromosome	Strand	Genelen	ExonNum	CDSLen	AALen	PI	MW (Da)
Clan 2	EVM0003603	PaCYP15A1	Chromosome 1	-	1705	4	1479	493	8.77	56707.38
	EVM0009779	PaCYP18A1	Chromosome 2	-	3713	7	1605	535	6.72	61774.78
	EVM0007945	PaCYP303A1	Chromosome 1	-	1746	7	1518	506	7.14	58558.45
	EVM0001723	PaCYP305A34	Chromosome 1	-	1623	3	1509	503	8.86	58139.54
	EVM0008860	PaCYP306A1	Chromosome 2	-	2554	4	1500	500	6.54	57222.54
	EVM0004208	PaCYP307A2	Chromosome 4	-	3265	9	1593	531	7.13	60963.59
	EVM0000618	PaCYP307B1	Chromosome 3	-	2602	3	1569	523	9.02	60184.63
Clan 3	EVM0005788	PaCYP3998B1	Chromosome 3	-	1904	3	1158	386	8.33	44280.39
	EVM0007979	PaCYP420C1	Chromosome 3	-	1968	9	1464	488	6.62	56706.49
	EVM0002438	PaCYP6AAA1P	Chromosome 3	-	1109	1	1038	346	8.06	40339.01
	EVM0000320	PaCYP6AAB1	Chromosome 2	-	1680	2	1485	495	8.82	56717.67
	EVM0011176	PaCYP6AAC1	Chromosome 1	-	1738	4	1416	472	7.64	54195.25
	EVM0005172	PaCYP6AAD1	Chromosome 3	+	2142	4	1500	500	8.34	58337.87
	EVM0003977	PaCYP6ET1	Chromosome 1	-	1708	5	1473	491	8.32	56432.87
	EVM0011861	PaCYP6EU7	Chromosome 1	+	5958	4	1518	506	6.46	59003.36
	EVM0010028	PaCYP6EU8	Chromosome 3	-	1985	10	1506	502	7.21	58450.66
	EVM0001503	PaCYP6FW1	Chromosome 4	+	1751	4	1470	490	8.15	56398.03
	EVM0003931	PaCYP6FX5	Chromosome 3	-	2314	5	1632	544	8.45	63018.13
	EVM0008668	PaCYP6GC1	Chromosome 2	-	1668	4	1500	500	9.18	57816.41
	EVM0004122	PaCYP6GF1	Chromosome 2	+	1916	3	1512	504	8.78	57612.91
	EVM0006654	PaCYP6PQ1	Chromosome 1	-	2310	6	1506	502	6.11	57591.64

	EVM0007561	PaCYP6PQ2	Chromosome 3	+	2178	4	1494	498	8.72	57067.29
	EVM0009272	PaCYP6ZY1	Chromosome 2	-	3194	5	1869	623	9.00	72428.91
	EVM0005751	PaCYP6ZZ1	Chromosome 1	+	2099	2	1500	500	8.79	57157.13
	EVM0010649	PaCYP9AT13	Chromosome 2	-	1965	4	1590	530	6.31	61222.74
	EVM0005770	PaCYP9HJ1	Chromosome 1	-	1698	4	1608	536	8.82	62234.46
	EVM0007293	PaCYP9HJ2	Chromosome 1	+	1881	6	1590	530	8.48	61036.71
	EVM0000292	PaCYP9HK1	Chromosome 1	+	2050	8	1605	535	6.32	62236.89
	EVM0008145	PaCYP9HL1	Chromosome 2	-	1652	4	1593	531	8.15	61109.13
Clan 4	EVM0007469	PaCYP3013A1	Chromosome 4	+	1758	3	1521	507	6.64	59389.88
	EVM0007575	PaCYP325BP1	Chromosome 4	+	6986	6	1524	508	8.80	59069.70
	EVM0010725	PaCYP3987A5	Chromosome 4	+	1649	5	1500	500	8.60	57097.82
	EVM0009536	PaCYP3987C1	Chromosome 4	+	1609	2	1425	475	8.67	55205.18
	EVM0005113	PaCYP3987D1	Chromosome 4	-	1975	5	1485	495	7.97	56777.59
	EVM0005667	PaCYP3996A5	Chromosome 1	+	2070	5	1467	489	8.16	56777.95
	EVM0007735	PaCYP3997A4	Chromosome 2	+	2383	3	1500	500	6.04	57939.91
	EVM0001371	PaCYP3997A5	Chromosome 3	-	1825	7	1491	497	8.83	58082.81
	EVM0003672	PaCYP4030A3	Chromosome 4	-	2606	3	1152	384	6.05	44974.12
	EVM0005123	PaCYP4038B1	Chromosome 2	-	1767	4	1539	513	8.63	60230.38
	EVM0006012	PaCYP4038C1	Chromosome 3	+	2257	6	1356	452	8.90	52547.22
	EVM0007072	PaCYP4702A1	Chromosome 4	-	2168	9	1443	481	8.45	56259.68
	EVM0007161	PaCYP4703A1	Chromosome 2	-	1548	8	1425	475	8.84	59983.76
	EVM0003657	PaCYP4C167	Chromosome 2	+	7074	6	1632	544	7.16	62614.29
	EVM0009599	PaCYP4D105	Chromosome 4	-	2552	2	1512	504	8.00	58344.93
	EVM0008066	PaCYP4D106	Chromosome 4	-	1889	4	1569	523	8.26	59534.42
	EVM0005110	PaCYP4D107	Chromosome 4	-	1707	3	1518	506	6.88	57200.80
	EVM0005550	PaCYP4G304	Chromosome 3	+	4340	5	1707	569	8.86	64825.04
	EVM0001303	PaCYP4G305	Chromosome 3	-	2276	8	1683	561	8.95	64767.93
	EVM0008669	PaCYP4G306	Chromosome 3	-	1816	5	1644	548	8.79	63005.78
	EVM0001233	PaCYP4MR6	Chromosome 1	+	1785	4	1479	493	6.03	57149.48
	EVM0010956	PaCYP4YW1	Chromosome 3	+	1717	5	1518	506	8.61	58614.98
	EVM0007328	PaCYP4YW2	Chromosome 1	+	1464	3	1188	396	6.07	45462.35
	EVM0006546	PaCYP4YX1	Chromosome 1	-	4313	2	1470	490	8.43	56293.22

	EVM0007218	PaCYP4YX2	Chromosome 1	-	1433	7	1311	437	7.13	50297.06
	EVM0001842	PaCYP4YZ1	Chromosome 1	+	2689	3	1425	475	8.35	54726.39
	EVM0003351	PaCYP4ZA1	Chromosome 1	-	1695	9	1380	460	5.82	53433.74
	EVM0004611	PaCYP4ZB1	Chromosome 3	+	2089	4	1485	495	8.60	57002.92
Mitochondrial (Mito) Clan	EVM0011060	PaCYP12AZ1	Chromosome 1	-	3272	4	1545	515	8.86	59491.71
	EVM0000161	PaCYP12P1v1	Chromosome 2	+	2307	5	1557	519	8.84	59983.76
	EVM0003565	PaCYP12P2P	Chromosome 2	+	8032	4	1401	467	8.84	59878.61
	EVM0005888	PaCYP301A1	Chromosome 1	+	4610	7	1641	547	8.90	62511.67
	EVM0000338	PaCYP302A1	Chromosome 1	-	1727	7	1491	497	8.9	57565.30
	EVM0011023	PaCYP314A1	Chromosome 4	-	6113	3	1578	526	5.96	60621.89
	EVM0007552	PaCYP315A1	Chromosome 3	-	4371	4	1476	492	8.88	56607.89

Table S3. Ka/Ks analysis for the duplicated PaP450 gene pairs

Duplicate pair (Gene ID)	Duplicate pair (Gene name)	Duplicate type	Ka	Ks	Ka/Ks	Purifying selection
EVM0000161/EVM0000338	PaCYP12P1v1/PaCYP302A1	Segmental duplication	0.853	2.116	0.403	Yes
EVM0000161/EVM0001233	PaCYP12P1v1/PaCYP4MR6	Segmental duplication	1.015	2.418	0.420	Yes
EVM0000161/EVM0001503	PaCYP12P1v1/PaCYP6FW1	Segmental duplication	0.892	3.254	0.274	Yes
EVM0000161/EVM0004208	PaCYP12P1v1/PaCYP307A2	Segmental duplication	0.963	1.795	0.537	Yes
EVM0000161/EVM0006012	PaCYP12P1v1/PaCYP4038C1	Segmental duplication	0.992	3.764	0.263	Yes
EVM0000161/EVM0007218	PaCYP12P1v1/PaCYP4YX2	Segmental duplication	0.908	2.521	0.360	Yes
EVM0000161/EVM0007735	PaCYP12P1v1/PaCYP3997A4	Segmental duplication	0.904	4.542	0.199	Yes
EVM0000161/EVM0007979	PaCYP12P1v1/PaCYP420C1	Segmental duplication	0.887	1.792	0.495	Yes
EVM0000161/EVM0011176	PaCYP12P1v1/PaCYP6AAC1	Segmental duplication	0.880	2.135	0.412	Yes
EVM0000292/EVM0003672	PaCYP9HK1/PaCYP4030A3	Segmental duplication	0.964	3.861	0.250	Yes
EVM0000292/EVM0006654	PaCYP9HK1/PaCYP6PQ1	Segmental duplication	0.770	2.301	0.335	Yes
EVM0000320/EVM0000338	PaCYP6AAB1/PaCYP302A1	Segmental duplication	0.938	2.327	0.403	Yes
EVM0000320/EVM0001503	PaCYP6AAB1/PaCYP6FW1	Segmental duplication	0.749	2.344	0.319	Yes
EVM0000320/EVM0004122	PaCYP6AAB1/PaCYP6GF1	Segmental duplication	0.675	1.858	0.363	Yes

EVM0000320/EVM0005788	PaCYP6AAB1/PaCYP3998B1	Segmental duplication	0.828	1.766	0.469	Yes
EVM0000320/EVM0006654	PaCYP6AAB1/PaCYP6PQ1	Segmental duplication	0.862	1.978	0.436	Yes
EVM0000320/EVM0007561	PaCYP6AAB1/PaCYP6PQ2	Segmental duplication	0.735	1.969	0.373	Yes
EVM0000320/EVM0007979	PaCYP6AAB1/PaCYP420C1	Segmental duplication	0.724	1.994	0.363	Yes
EVM0000338/EVM0001503	PaCYP302A1/PaCYP6FW1	Segmental duplication	1.026	6.004	0.171	Yes
EVM0000338/EVM0004208	PaCYP302A1/PaCYP307A2	Segmental duplication	1.009	2.729	0.370	Yes
EVM0000338/EVM0005172	PaCYP302A1/PaCYP6AAD1	Segmental duplication	0.970	1.663	0.583	Yes
EVM0000618/EVM0004122	PaCYP307B1/PaCYP6GF1	Segmental duplication	1.048	3.112	0.337	Yes
EVM0000618/EVM0005751	PaCYP307B1/PaCYP6ZZ1	Segmental duplication	0.965	2.535	0.381	Yes
EVM0001371/EVM0007561	PaCYP3997A5/PaCYP6PQ2	Segmental duplication	0.895	3.909	0.229	Yes
EVM0001503/EVM0003931	PaCYP6FW1/PaCYP6FX5	Segmental duplication	0.793	2.263	0.350	Yes
EVM0001503/EVM0004122	PaCYP6FW1/PaCYP6GF1	Segmental duplication	0.790	1.514	0.522	Yes
EVM0001503/EVM0006654	PaCYP6FW1/PaCYP6PQ1	Segmental duplication	0.772	2.188	0.353	Yes
EVM0001503/EVM0007735	PaCYP6FW1/PaCYP3997A4	Segmental duplication	0.917	2.690	0.341	Yes
EVM0001723/EVM0004122	PaCYP305A34/PaCYP6GF1	Segmental duplication	1.036	1.750	0.592	Yes
EVM0003351/EVM0005751	PaCYP4ZA1/PaCYP6ZZ1	Segmental duplication	0.850	2.992	0.284	Yes
EVM0003351/EVM0010028	PaCYP4ZA1/PaCYP6EU8	Segmental duplication	0.924	2.256	0.409	Yes
EVM0003657/EVM0003931	PaCYP4C167/PaCYP6FX5	Segmental duplication	0.812	1.928	0.421	Yes
EVM0003672/EVM0007735	PaCYP4030A3/PaCYP3997A4	Segmental duplication	0.783	2.137	0.367	Yes
EVM0003977/EVM0004122	PaCYP6ET1/PaCYP6GF1	Segmental duplication	0.612	2.063	0.297	Yes
EVM0003977/EVM0007979	PaCYP6ET1/PaCYP420C1	Segmental duplication	0.779	2.256	0.345	Yes
EVM0003977/EVM0009536	PaCYP6ET1/PaCYP3987C1	Segmental duplication	0.883	1.853	0.476	Yes
EVM0004122/EVM0004208	PaCYP6GF1/PaCYP307A2	Segmental duplication	0.918	2.602	0.353	Yes
EVM0004122/EVM0005751	PaCYP6GF1/PaCYP6ZZ1	Segmental duplication	0.631	1.537	0.411	Yes
EVM0004122/EVM0007552	PaCYP6GF1/PaCYP315A1	Segmental duplication	1.051	2.588	0.406	Yes
EVM0004122/EVM0007561	PaCYP6GF1/PaCYP6PQ2	Segmental duplication	0.789	3.371	0.234	Yes

EVM0004122/EVM0007575	PaCYP6GF1/PaCYP325BP1	Segmental duplication	0.915	3.106	0.295	Yes
EVM0004122/EVM0007735	PaCYP6GF1/PaCYP3997A4	Segmental duplication	0.934	2.042	0.457	Yes
EVM0004208/EVM0005113	PaCYP307A2/PaCYP3987D1	Segmental duplication	1.069	1.751	0.610	Yes
EVM0004208/EVM0009779	PaCYP307A2/PaCYP18A1	Segmental duplication	0.884	2.299	0.384	Yes
EVM0004611/EVM0009779	PaCYP4ZB1/PaCYP18A1	Segmental duplication	0.987	2.123	0.465	Yes
EVM0005550/EVM0007218	PaCYP4G304/PaCYP4YX2	Segmental duplication	0.775	2.819	0.275	Yes
EVM0005550/EVM0007552	PaCYP4G304/PaCYP315A1	Segmental duplication	0.961	1.983	0.485	Yes
EVM0005788/EVM0011023	PaCYP3998B1/PaCYP314A1	Segmental duplication	0.969	2.406	0.403	Yes
EVM0005888/EVM0010956	PaCYP301A1/PaCYP4YW1	Segmental duplication	0.912	2.279	0.400	Yes
EVM0007561/EVM0011861	PaCYP6PQ2/PaCYP6EU7	Segmental duplication	0.731	2.473	0.296	Yes
EVM0007735/EVM0009536	PaCYP3997A4/PaCYP3987C1	Segmental duplication	0.750	1.740	0.431	Yes
EVM0007945/EVM0008668	PaCYP303A1/PaCYP6GC1	Segmental duplication	1.019	1.972	0.517	Yes
EVM0010028/EVM0010725	PaCYP6EU8/PaCYP3987A5	Segmental duplication	0.964	1.622	0.594	Yes
EVM0010725/EVM0011861	PaCYP3987A5/ PaCYP6EU7	Segmental duplication	0.913	1.930	0.473	Yes
EVM0001303/EVM0008669	PaCYP4G305/PaCYP4G306	tandem duplication	0.257	1.051	0.244	Yes
EVM0006546/EVM0007218	PaCYP4YX1/PaCYP4YX2	tandem duplication	0.154	0.280	0.549	Yes
EVM0007072/EVM0010725	PaCYP4702A1/PaCYP3987A5	tandem duplication	0.835	1.546	0.540	Yes
EVM0007328/EVM0011060	PaCYP4YW2/PaCYP12AZ1	tandem duplication	0.925	2.147	0.431	Yes
EVM0008066/EVM0009599	PaCYP4D106/PaCYP4D105	tandem duplication	0.549	1.951	0.281	Yes
EVM0008145/EVM0010649	PaCYP9HL1/PaCYP9AT13	tandem duplication	0.484	2.960	0.164	Yes
EVM0008668/EVM0009272	PaCYP6GC1/PaCYP6ZY1	tandem duplication	0.488	1.664	0.294	Yes
EVM0001723/EVM0003603	PaCYP305A34/PaCYP15A1	tandem duplication	0.672	2.368	0.284	Yes
EVM0005770/EVM0007293	PaCYP9HJ1 PaCYP9HJ2	tandem duplication	0.367	NA	NA	Yes
EVM0007469/EVM0007575	PaCYP325BP1 PaCYP3013A1	tandem duplication	0.524	NA	NA	Yes

Table S4. The significant change of gut expressed-PaP450 genes. The remarkable alterations are marked in bold.

Gene Name	Gene ID	CV-5 µg/l group vs CV-50 µg/l group			GD-5 µg/l group vs GD-50 µg/l group			GDC vs CVC		
		FDR	log2FC	Regulation	FDR	log2FC	Regulation	FDR	log2FC	Regulation
PaCYP12P1v1	EVM0000161	0.999757619	-0.025613621	normal	0.011934384	-0.655902676	normal	0.89521516	-0.048369782	normal
PaCYP9HK1	EVM0000292	0.999757619	-0.172958098	normal	0.006347362	-0.80566209	normal	0.306965242	-0.366540088	normal
PaCYP6AAB1	EVM0000320	0.999757619	0.431490211	normal	0.543798829	-0.467976689	normal	0.946486981	-0.045017188	normal
PaCYP302A1	EVM0000338	--	--	--	--	--	--	--	--	--
PaCYP307B1	EVM0000618	--	--	--	--	--	--	--	--	--
PaCYP4MR6	EVM0001233	0.740227418	-0.677138195	normal	2.11E-07	-1.76266812	down	0.138944537	0.413469744	normal
PaCYP4G305	EVM0001303	--	--	--	--	--	--	--	--	--
PaCYP3997A5	EVM0001371	--	--	--	--	--	--	--	--	--
PaCYP6FW1	EVM0001503	0.999757619	-0.653180007	normal	1.05E-18	-3.098304149	down	0.331681087	-0.299403605	normal
PaCYP305A34	EVM0001723	0.999757619	0.087737809	normal	0.477542538	-0.385871998	normal	0.553884124	0.268678126	normal
PaCYP4YZ1	EVM0001842	0.999757619	0.202684758	normal	0.000872741	-0.950407082	normal	1.81E-06	0.35879947	normal
PaCYP6AAA1P	EVM0002438	0.999757619	-0.529235833	normal	0.007344122	-1.680422055	down	0.095436526	0.74433786	normal
PaCYP4ZA1	EVM0003351	0.936271828	-0.568385515	normal	0.000937078	-1.471210574	down	0.986751896	-0.008542417	normal
PaCYP12P2P	EVM0003565	0.999757619	0.130521638	normal	0.219225071	-0.320355316	normal	0.711837787	0.174108293	normal
PaCYP15A1	EVM0003603	--	--	--	--	--	--	--	--	--
PaCYP4C167	EVM0003657	0.999757619	0.465936986	normal	0.026449106	1.320700891	normal	0.767426327	0.181571164	normal
PaCYP4030A3	EVM0003672	0.999757619	-0.096454345	normal	0.477195339	-0.468211478	normal	0.800500337	0.146976384	normal
PaCYP6FX5	EVM0003931	0.999757619	-0.189289604	normal	7.54E-15	-2.977503988	down	0.786672823	0.106985528	normal
PaCYP6ET1	EVM0003977	0.999757619	-0.009116339	normal	0.001510159	-0.65036985	normal	0.805746347	0.073598059	normal

PaCYP6GF1	EVM0004122	0.999757619	0.313404451	normal	0.838205647	0.043992303	normal	5.41E-07	-0.613794879	normal
PaCYP307A2	EVM0004208	--	--	--	--	--	--	--	--	--
PaCYP4ZB1	EVM0004611	--	--	--	--	--	--	--	--	--
PaCYP12P1v2	EVM0004993	0.999757619	-0.159499865	normal	1.36E-08	-0.619892274	normal	0.623974805	0.178178506	normal
PaCYP4D107	EVM0005110	0.999757619	-0.602081389	normal	0.371853783	-0.549083414	normal	0.783823507	-0.132756377	normal
PaCYP3987D1	EVM0005113	0.907128911	0.756154822	normal	--	--	--	--	--	--
PaCYP4038B1	EVM0005123	0.999757619	0.510743255	normal	0.545967351	0.096698271	normal	0.001163491	0.3724822	normal
PaCYP6AAD1	EVM0005172	0.999757619	-0.034936887	normal	2.30E-07	-1.009409008	down	0.620281109	-0.264704949	normal
PaCYP4G304	EVM0005550	--	--	--	--	--	--	--	--	--
PaCYP3996A5	EVM0005667	0.999757619	0.157435005	normal	0.055942179	-0.774457482	normal	0.704242451	0.147327668	normal
PaCYP6ZZ1	EVM0005751	0.999757619	-0.136453185	normal	0.107950316	-0.446568548	normal	0.374011006	0.272070001	normal
PaCYP9HJ1	EVM0005770	0.582950021	-0.690814625	normal	0.341298856	-0.32541362	normal	0.000131038	-0.246711699	normal
PaCYP3998B1	EVM0005788	0.999757619	-0.415705263	normal	7.97E-05	-1.734197782	down	0.118463731	-0.699689356	normal
PaCYP301A1	EVM0005888	0.999757619	-0.112422838	normal	1.12E-11	1.698931114	up	0.53706575	-0.338432926	normal
PaCYP4038C1	EVM0006012	--	--	--	--	--	--	--	--	--
PaCYP4YX1	EVM0006546	--	--	--	--	--	--	--	--	--
PaCYP6PQ1	EVM0006654	0.999757619	-0.276715154	normal	8.16E-07	-0.835296278	normal	0.967543832	-0.017025192	normal
PaCYP4702A1	EVM0007072	--	--	--	--	--	--	--	--	--
PaCYP4703A1	EVM0007161	0.999757619	0.4619486	normal	0.053128093	1.193347522	normal	0.696471701	0.251081019	normal
PaCYP4YX2	EVM0007218	--	--	--	--	--	--	--	--	--
PaCYP9HJ2	EVM0007293	0.999757619	-0.592394923	normal	0.017070341	-0.572181367	normal	0.038350039	-0.698633915	normal
PaCYP4YW2	EVM0007328	--	--	--	--	--	--	0.658285013	-0.275165837	normal
PaCYP3013A1	EVM0007469	--	--	--	--	--	--	0.743498572	-0.226313332	normal
PaCYP315A1	EVM0007552	0.999757619	-0.374029022	normal	0.560831467	0.348570153	normal	0.977157348	0.018496425	normal
PaCYP6PQ2	EVM0007561	0.286885531	-0.984167157	normal	0.030519979	-0.830855324	normal	0.484248739	-0.345538754	normal
PaCYP325BP1	EVM0007575	0.999757619	-0.628518795	normal	5.88E-24	-2.624279818	down	3.59E-06	0.869926491	normal

PaCYP3997A4	EVM0007735	--	--	--	--	--	--	--	--	--
PaCYP303A1	EVM0007945	--	--	--	--	--	--	0.996509563	0.003095283	normal
PaCYP420C1	EVM0007979	0.999757619	0.188919349	normal	1.03E-06	-2.026296576	down	0.997521486	0.00138415	normal
PaCYP4D106	EVM0008066	0.999757619	-0.698696426	normal	2.44E-09	-1.998421925	down	0.06694779	0.714165477	normal
PaCYP9HL1	EVM0008145	0.999757619	0.301024284	normal	0.033820008	-0.565535174	normal	0.694992802	-0.166714474	normal
PaCYP6GC1	EVM0008668	0.999757619	-0.103173863	normal	0.002177869	-0.927934371	normal	0.007214216	0.484139386	normal
PaCYP4G306	EVM0008669	--	--	--	--	--	--	--	--	--
PaCYP306A1	EVM0008860	0.999757619	-0.029991102	normal	0.343704146	0.331792428	normal	0.77549344	0.09473434	normal
PaCYP6ZY1	EVM0009272	0.999757619	0.325172251	normal	0.063857581	-0.721974418	normal	0.937165744	-0.046052662	normal
PaCYP3987C1	EVM0009536	--	--	--	--	--	--	--	--	--
PaCYP4D105	EVM0009599	0.999757619	-0.301663194	normal	1.72E-05	-1.440754401	down	0.75400455	0.167669442	normal
PaCYP18A1	EVM0009779	0.999757619	0.359952845	normal	0.013356582	1.634478349	normal	0.764478216	0.161494625	normal
PaCYP6EU8	EVM0010028	0.69760679	-0.804062596	normal	8.46E-10	-1.615243487	down	0.65538807	-0.280107441	normal
PaCYP9AT13	EVM0010649	0.999757619	0.074777717	normal	0.63771133	-0.084107319	normal	0.048310833	-0.402221728	normal
PaCYP3987A5	EVM0010725	--	--	--	--	--	--	--	--	--
PaCYP4YW1	EVM0010956	0.999757619	0.099290054	normal	0.065201856	0.599217369	normal	0.472032749	-0.289075981	normal
PaCYP314A1	EVM0011023	0.999757619	-0.665974861	normal	2.58E-06	-1.907657615	down	0.139881919	-0.603007984	normal
PaCYP12AZ1	EVM0011060	0.999757619	-0.201196265	normal	0.001091199	-0.350497583	normal	0.910883488	-0.037880747	normal
PaCYP6AAC1	EVM0011176	0.999757619	-0.025613621	normal	--	--	--	--	--	--
PaCYP6EU7	EVM0011861	0.999757619	-0.172958098	normal	5.19E-05	-1.497877914	down	0.963132994	-0.01920504	normal

Table S5. The comparison of gut expressed-PaP450 genes between CV and GD samples. The remarkable alterations are marked in bold.

Gene Name	Gene ID	GN-5 µg/l group vs CV-5 µg/l group			GD-5 µg/l group vs GD-50 µg/l group		
		FDR	log2FC	Regulation	FDR	log2FC	Regulation

PaCYP6FX5	EVM0003931	0.000436208	1.954359266	up	0.274394604	-0.488382927	normal
PaCYP325BP1	EVM0007575	5.47E-22	3.103531481	up	7.11E-06	1.293248468	up
PaCYP420C1	EVM0007979	0.007190843	1.583188755	up	0.023155389	-0.560089454	normal
PaCYP4YZ1	EVM0001842	2.10E-05	1.503162329	up	0.176643433	0.366596953	normal
PaCYP6FW1	EVM0001503	0.001144378	1.517680403	up	0.433413411	-0.392306712	normal
PaCYP301A1	EVM0005888	0.007327191	-1.143497409	down	0.042152501	0.616073789	normal
PaCYP3987D1	EVM0005113	0.315647891	0.201567804	normal	0.001965708	-1.104092689	down
PaCYP3998B1	EVM0005788	0.880779455	0.111265203	normal	0.005186411	-1.050572294	down