

Metabolomic study of Chinese medicine Huang Qin Decoction as an effective treatment for irinotecan-induced gastrointestinal toxicity

Jing Wang^{a,b}, Hongyan Fan^{a,b}, Yong Wang^c, Xu Wang^{a,b}, Pei Zhang^{a,b}, Jiaqing Chen^{a,b}, YuanTian^{a,b},

Wei Zhang^d, Fengguo Xu^{a,b*}, Zunjian Zhang^{a,b*}

^a MOE Key Laboratory of Drug Quality Control and Pharmacovigilance, China Pharmaceutical

University, Nanjing, 210009, China ;

^b State key laboratory of natural medicine, China Pharmaceutical University, Nanjing, 210009, China

^c Jiangsu Institute for Food and Drug Control, Nanjing 210008, China

^d State Key Laboratory for Quality Research in Chinese Medicines, Macau University of Science and Technology, Taipa, Macau, China

*Corresponding authors:

Fengguo Xu

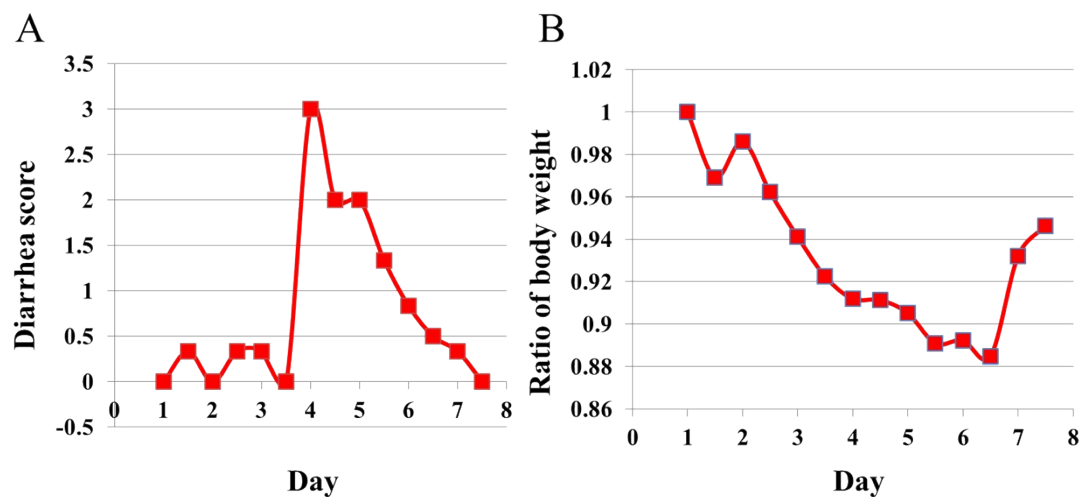
Key Laboratory of Drug Quality Control and Pharmacovigilance (Ministry of Education), China Pharmaceutical University, Nanjing 210009, China.

Fax.: +86 025 83271021; Tel.: +86 025 83271021; E-mail : fengguoxu@gmail.com

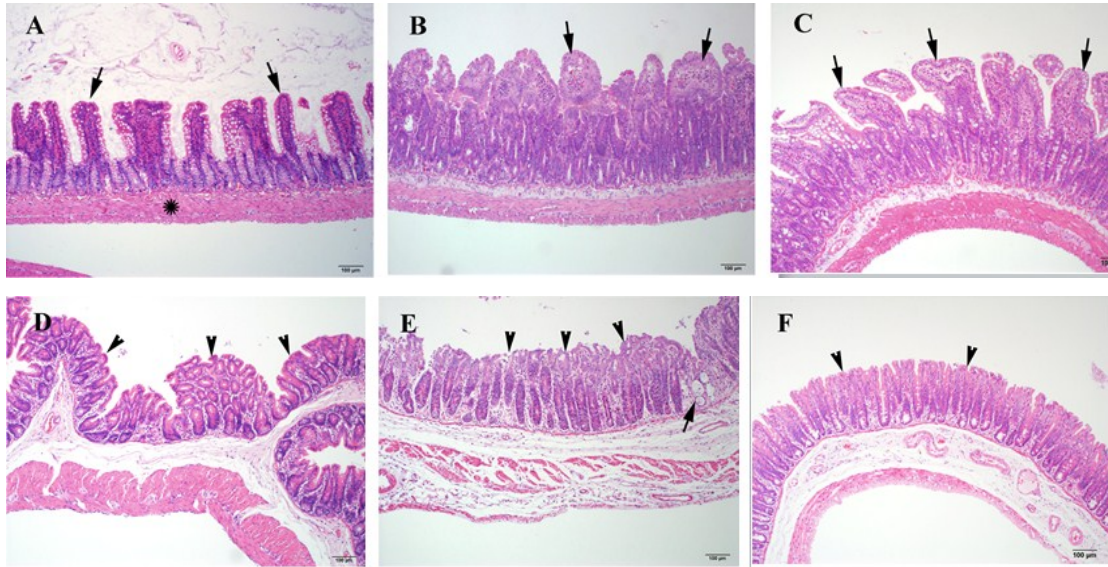
Zunjian Zhang

Key Laboratory of Drug Quality Control and Pharmacovigilance (Ministry of Education), China Pharmaceutical University, Nanjing 210009, China.

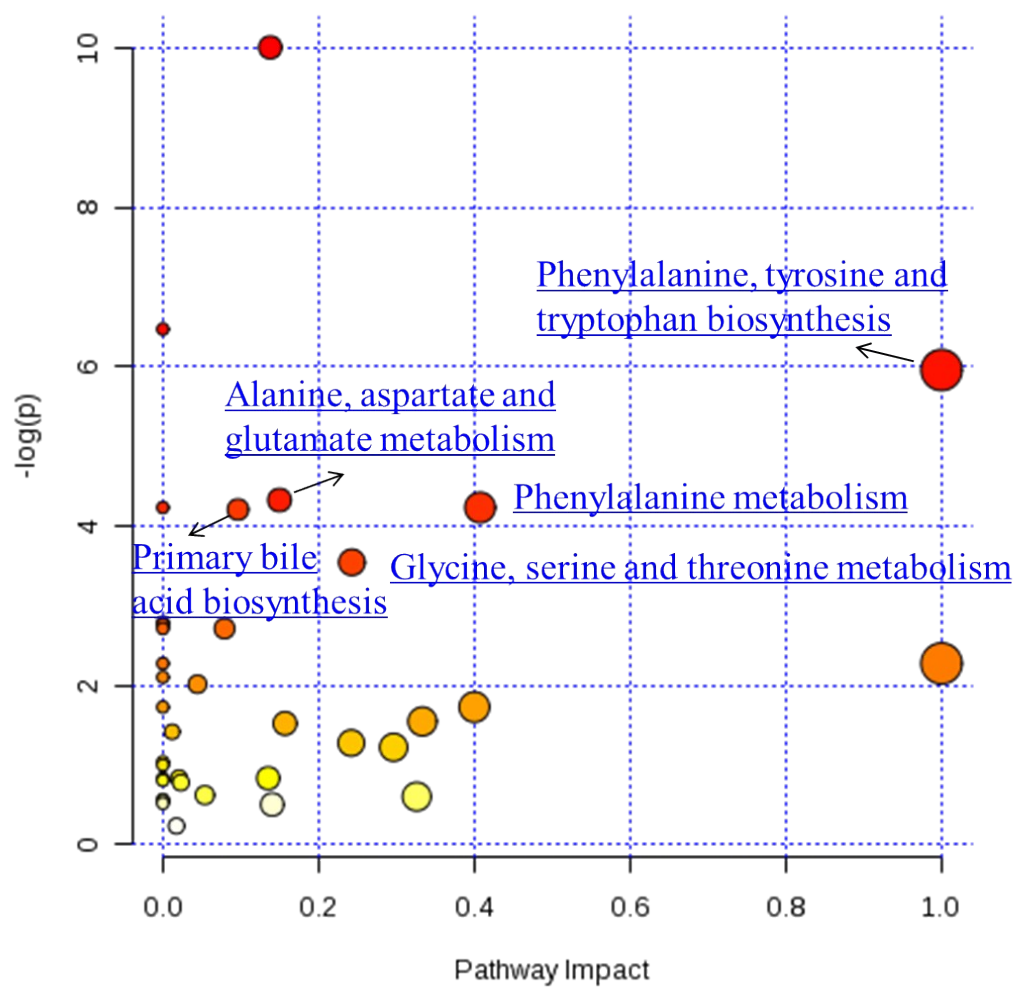
Fax.: +86 025 83271454; Tel. :+86 025 83271454; E-mail: zunjianzhangcpu@hotmail.com



Supplementary Fig. 1 A) The curve of diarrhea scored B) body weight monitored twice per day for 7 days after i.v. administration of CPT-11 in our preliminary experiments.



Supplementary Fig. 2 The histopathological micrographs of ileum and cecum showing more serious toxicity by CPT-11 exposure A) normal ileum of group C; B) ileum of group T; C) ileum of group H/T; D) normal cecum of group C; E) cecum of group T; F) cecum of group H/T.



Supplementary Fig. 3 Integrated pathways related to CPT-11-induced gastrointestinal toxicity (MetaboAnalyst for pathway analysis).

Supplementary Table 1 44 differential metabolites in the serum of group C and T detected by GC/MS and LC/MS analysis

	NO.	RT (min)	Metabolites	VIP	<i>p</i> -value
GC/MS	1	5.700	Ethanolamine	1.83	2.20E-04
	2	9.831	Leucine	4.72	8.12E-04
	3	9.880	Phosphoric acid	9.61	3.23E-05
	4	10.743	propanoic acid	1.10	1.39E-04
	5	11.169	Serine	1.93	0.0243
	6	11.567	Threonine	2.96	0.00182
	7	12.936	Succinic acid	1.12	0.0179
	8	13.876	Creatinine	2.27	2.76E-04
	9	14.057	Pentanedioic acid	1.63	9.99E-04
	10	14.741	Phenylalanine	2.58	2.20E-04
	11	15.445	Arabinose	1.12	4.29E-04
	12	16.011	N-acetylglutamine	1.20	0.0209
	13	16.438	Glutamine	3.99	0.00221
	14	17.019	Citric acid	3.88	3.23E-05
	15	17.809	alloxanoic acid	1.83	1.39E-04
	16	18.117	Histidine	2.27	3.23E-05
	17	18.281	Tyrosine	2.72	0.00389
	18	18.904	Myo-Inositol	1.03	0.00150
	19	19.198	Palmitic acid	3.78	2.76E-04
	20	19.785	Indole-3-acetic acid	1.41	8.12E-04
	21	19.989	Uric acid	1.73	6.58E-04
	22	20.831	Linoleic acid	1.59	6.58E-04
	23	20.863	Oleic acid	1.50	0.00150
	24	22.283	Arachidonic acid	1.28	0.0350
	25	28.673	Cholesterol	2.68	5.31E-05
LC/MS	26	0.756	Creatine	1.62	0.00221
	27	2.164	Tryptophan	1.55	0.00666
	28	8.025	Stearidonyl carnitine	1.33	3.23E-05
	29	8.274	Taurochenodesoxycholic acid	1.48	3.23E-05
	30	9.082	Glycocholic acid	3.14	3.23E-05
	31	10.266	Cholic acid	3.51	0.00467
	32	11.976	LysoPC(14:0)	1.98	1.39E-04
	33	12.241	Deoxycholic acid	1.74	6.58E-04
	34	12.251	Docosatrienoic acid	2.91	0.00263
	35	12.428	LysoPC(16:1)	3.07	3.23E-05
	36	12.706	LysoPC(15:0)	2.35	4.15E-05
	37	13.351	LysoPE(16:0)	1.34	9.99E-04
	38	13.576	LysoPC(20:3)	1.63	3.23E-05
	39	13.782	PE(P-16:0e/0:0)	1.75	1.39E-04
	40	13.825	20a,22b-Dihydroxycholesterol	1.32	5.32E-04
	41	14.319	LysoPC(20:2)	1.98	1.39E-04

42	14.870	LysoPE(18:0)	1.36	0.0153
43	14.990	LysoPE(20:0)	1.23	0.00268
44	15.314	LysoPC(20:1)	1.10	0.0179