Table S1. Linearity and range for the analysis of mesaconine in all samples.

Samples	Range (ng/ml)	Typical equations of calibration curves	correlation coefficients (r)
Plasma	2-5000	y=0.00439053x-0.00185297	0.9991
Heart	4-5000	y=0.00176615x-0.00496489	0.9993
Liver	4-5000	y=0.00120098x＋0.0753063	0.9992
Spleen	4-5000	y=0.00107078x＋0.00305726	0.9975
Lung	4-5000	y=0.00105747x-0.00152313	0.9981
Kidney	4-5000	y=0.000923627x-0.277123	0.9973
Brain	4-5000	y=0.00124782x-0.00237299	0.9995
Stomach	4-5000	y=0.00150709x-0.00070816	0.9988
Intestine	4-5000	y=0.00110232x-0.00472408	0.9988
Muscle	4-5000	y=0.00110067x-0.0050217	0.9992
Urine	4-5000	y=0.0142351x＋0.00221327	0.9997
Feces	4-5000	y=0.0148957x＋0.149368	0.9962
IAS(μg/ml)	7.8-1000	y=0.00458x＋0.30798	0.9983

IAS: Intestinal absorption solution

Table S2. Precision and accuracy for the analysis of mesaconine in all samples (n = 6).

Samples	Concentration (ng/ml)	Precision (RSD%)		Accuracy (RE%)
		Intra-day	Inter-day	
Plasma	2	17.8	18.2	-15.1
	6	11.7	14.8	-14.9
	400	7.6	10.5	-3.9
	4000	6.4	12.6	1.6
Heart	4	13.5	15.4	10.9
	12	12.8	13.9	10.3
	400	8.1	9.8	-7.4
	4000	6.9	6.3	8.2
Liver	4	14.8	16.3	13.5
	12	9.7	11.6	13.7
	400	10.3	10.4	9.8
	4000	7.4	8.1	-4.1

Spleen	4	17.5	19.1	15.0
	12	11.2	13.2	14.2
	400	9.0	10.3	8.9
	4000	9.7	11.9	9.6
Lung	4	14.2	16.7	12.3
	12	10.7	13.4	10.4
	400	7.2	8.1	-6.3
	4000	11.8	11.9	7.1
Kidney	4	11.0	15.7	13.6
	12	12.9	13.2	9.5
	400	9.3	9.9	10.4
	4000	8.1	10.1	6.9
Brain	4	12.4	16.2	10.9
	12	9.7	8.9	9.9
	400	7.8	10.6	11.2
	4000	5.9	7.2	12.8
Stomach	4	11.2	13.4	12.0
	12	10.3	9.9	13.1
	400	12.5	10.4	7.6
	4000	8.4	9.1	9.4
Intestine	4	10.5	11.7	18.4
	12	8.2	9.0	12.5
	400	6.9	8.7	-8.3
	4000	12.4	11.0	10.6
Muscle	4	13.4	15.6	-9.8
	12	10.8	8.9	13.8
	400	9.0	10.9	9.3
	4000	8.7	9.5	8.9
Urine	4	11.5	12.7	12.1
	12	9.3	9.2	7.7
	400	4.5	5.6	4.9
	4000	6.2	7.0	-5.3
Feces	4	15.6	15.4	18.3
	12	10.9	12.1	13.7
	400	8.0	9.1	10.4
	4000	9.3	10.8	-6.9
IAS(μg/ml)	7.8	13.4	15.7	17.9
	31	10.4	9.8	11.4
	250	9.8	12.7	9.2
	800	7.3	8.6	-6.7

IAS: Intestinal absorption solution

Table S3. Extraction recovery and matrix effect for the analysis of mesaconine in all samples (n = 6).

Samples	Concentration (ng/ml)	Extraction recovery		Matrix effect	
		Mean(%)	RSD%	Mean(%)	RSD%
Plasma	6	86.5	14.5	102.8	14.2
	400	101.4	10.8	109.8	7.8
	4000	105.7	5.4	106.9	10.0
Heart	12	87.6	13.7	85.9	6.2
	400	90.3	5.0	111.2	5.9
	4000	103.5	10.6	90.3	4.7
Liver	12	92.1	9.7	101.2	6.6
	400	97.4	5.6	97.1	7.1
	4000	102.6	7.1	108.0	7.5
Spleen	12	85.4	14.4	107.6	6.8
	400	109.6	4.9	92.3	8.5
	4000	92.0	9.7	103.7	7.9
Lung	12	106.8	10.3	92.4	10.4
	400	98.3	5.9	89.3	6.1
	4000	104.6	9.3	104.7	7.9
Kidney	12	88.2	8.0	85.1	10.5
	400	93.7	11.4	96.7	8.4
	4000	110.4	9.4	93.4	9.7
Brain	12	112.6	11.6	87.3	10.8
	400	96.8	8.6	96.4	12.7
	4000	103.9	7.1	106.7	9.4
Stomach	12	91.5	9.7	109.7	7.1
	400	101.7	4.9	97.2	9.2
	4000	109.6	13.4	95.4	8.4
Intestine	12	87.0	8.9	95.7	9.7
	400	96.8	11.8	93.1	8.8
	4000	105.6	10.2	87.5	13.4
Muscle	12	85.2	8.4	94.6	13.7
	400	92.4	12.4	89.1	9.4
	4000	109.7	14.7	113.7	12.6
Urine	12	106.8	10.3	91.4	12.7
	400	85.3	9.8	106.1	9.3
	4000	90.5	6.4	97.8	11.9
Feces	12	94.7	11.6	99.6	8.8
	400	90.9	8.1	86.1	10.1
	4000	111.3	5.4	90.4	6.7
IAS(μg/ml)	31	93.0	9.7	91.7	9.7
	250	108.7	6.3	96.3	10.4
	800	95.4	7.9	105.4	9.1

IAS: Intestinal absorption solution

Table S4. Stability of mesaconine in all samples (n = 3).

Samples	Concentration (ng/ml)	Freeze/thaw (3 cycles)		Room temperature for 2h		Auto-sampler 4℃ for 24h		Storage at -20℃ for 30 days	
		Mean(%)	RSD%	Mean(%)	RSD%	Mean(%)	RSD%	Mean(%)	RSD%
Plasma	6	95.3	8.6	85.2	11.3	90.2	10.3	87.4	11.9
	400	106.8	10.3	99.2	9.8	91.6	7.7	105.3	9.8
	4000	87.9	6.8	91.9	6.7	95.1	12.1	94.7	10.1
Heart	12	89.7	8.9	87.6	13.1	106.9	9.8	89.6	12.4
	400	92.0	10.2	104.7	10.6	88.3	10.3	96.4	9.9
	4000	103.9	7.7	94.3	10.8	93.6	11.4	106.7	8.6
Liver	12	108.3	9.8	92.6	9.7	86.9	12.8	110.2	11.7
	400	98.4	5.9	97.4	6.0	90.5	9.7	98.9	6.2
	4000	103.7	7.3	107.6	7.5	88.0	8.5	92.6	10.4
Spleen	12	88.3	14.8	86.2	11.3	104.8	12.8	110.2	9.6
	400	91.9	9.5	103.5	10.2	99.3	11.0	102.4	10.3
	4000	103.6	6.8	97.6	8.0	112.7	8.2	98.4	9.0
Lung	12	90.2	13.5	113.7	12.8	89.7	13.4	90.3	10.8
	400	96.3	8.9	97.0	10.4	102.5	12.7	107.4	11.0
	4000	109.7	8.8	106.9	9.9	90.2	8.7	94.2	10.2
Kidney	12	92.6	9.4	86.4	8.8	91.1	12.0	89.1	11.4
	400	95.1	12.7	94.7	12.9	107.2	10.9	101.4	8.9
	4000	89.7	10.2	106.2	11.0	98.6	7.1	93.9	8.4
Brain	12	102.7	11.6	89.4	8.9	86.0	10.5	90.3	9.7
	400	93.8	9.9	109.3	10.2	90.6	11.0	92.6	10.1
	4000	106.1	10.2	98.0	6.3	109.2	9.2	91.0	8.8
Stomach	12	89.4	12.8	109.7	13.9	87.3	10.7	111.6	11.7
	400	91.6	6.0	111.6	10.3	95.9	8.9	97.3	7.8
	4000	104.7	10.1	95.4	9.8	106.4	9.3	98.2	8.0
Intestine	12	86.2	11.2	106.8	10.5	114.4	10.1	109.4	9.3
	400	107.4	10.9	93.5	8.8	92.7	12.6	93.7	6.9
	4000	98.6	7.8	98.0	6.9	104.8	9.2	95.0	8.9
Muscle	12	110.8	13.9	109.6	14.2	109.6	12.0	110.3	11.3
	400	107.6	14.3	98.7	12.7	98.3	11.1	87.9	10.6
	4000	91.3	12.8	106.4	12.8	110.7	13.9	92.6	9.2
Urine	12	92.7	7.1	86.4	8.2	103.8	14.1	89.2	11.0
	400	96.4	6.2	102.6	7.6	99.4	9.4	91.4	8.8
	4000	102.3	9.4	93.1	5.9	91.8	10.2	94.8	9.7
Feces	12	89.7	9.8	88.7	12.8	90.3	11.3	103.8	8.4
	400	92.6	12.7	90.1	14.2	102.4	9.1	111.6	9.3
	4000	106.7	7.8	13.0	8.5	92.1	11.0	92.2	10.8
IAS	31	108.1	13.9	90.8	12.6	110.7	14.2	109.4	11.2
(μg/ml)	250	97.5	12.9	92.0	11.2	99.6	10.4	89.3	9.7
	800	92.3	9.5	108.9	9.8	89.0	8.9	92.1	8.9

IAS: Intestinal absorption solution

Table S5. The values of the tissue to plasma partition coefficient (*Kp*) (n=6).

Tissues	0.5h	2h	6h
Heart	0.09 ± 0.01	0.24 ± 0.07	0.63 ± 0.12
Liver	3.08 ± 0.52	20.09 ± 3.89	24.48 ± 5.02
Spleen	0.05 ± 0.01	1.00 ± 0.21	2.16 ± 0.40
Lung	0.08 ± 0.02	0.47 ±0.11	0.82 ± 0.18
Kidney	1.74 ± 0.42	18.03 ± 4.02	27.01 ± 7.09
Brain	0.01 ± 0.00	0.06 ± 0.01	0.08 ± 0.02
Stomach	0.07 ± 0.01	0.22 ± 0.05	1.39 ± 0.27
Intestine	0.20 ± 0.02	0.65 ± 0.20	1.46 ± 0.28
Muscle	0.09 ± 0.01	0.24 ± 0.07	0.63 ± 0.12