

Table 7 Ferulic acid 在家兔血漿中定量分析之回收率(Recovery)試驗

Spiked conc. ($\mu\text{g/ml}$)	Recovery		Test
	Ferulic acid in plasma	Ferulic acid in methanol	Recovery (%)
100	347.80 \pm 10.29	350.601 \pm 7.126	98.54 \pm 0.670
50	179.56 \pm 3.02	180.392 \pm 0.759	99.08 \pm 1.397
30	101.93 \pm 5.09	105.584 \pm 1.900	94.45 \pm 3.320
10	35.714 \pm 1.470	37.469 \pm 3.415	91.31 \pm 6.193
5	17.407 \pm 0.214	17.961 \pm 0.632	96.97 \pm 2.632
3	10.752 \pm 0.416	11.094 \pm 0.357	94.13 \pm 2.891
1	3.580 \pm 0.055	3.586 \pm 0.043	98.21 \pm 0.631
0.5	1.647 \pm 0.057	1.678 \pm 0.059	94.17 \pm 0.300
0.1	0.336 \pm 0.008	0.342 \pm 0.007	96.17 \pm 0.772
0.05	0.177 \pm 0.004	0.181 \pm 0.007	95.16 \pm 0.452
Mean			95.79%
S.D.			0.023
C.V.			2.43

Table 8 Ferulic acid 在家兔血漿中之同日內(Intraday)精確性試驗

Spiked Conc. ($\mu\text{g/ml}$)	No.1	No.2	No.3	Mean	S. D.	C.V.(%)
	No.4	No.5	No.6			
100	100.534	101.754	99.954	99.867	1.101	1.10
	99.752	98.753	98.452			
50	49.956	52.171	50.119	50.594	0.993	1.96
	50.732	51.432	49.153			
30	30.457	29.753	30.952	30.104	0.925	3.07
	31.254	28.453	29.754			
10	10.429	10.415	9.973	10.161	0.310	3.06
	9.752	9.854	10.542			
5	4.579	5.124	4.849	4.906	0.176	3.59
	4.987	5.043	4.852			
3	2.752	3.129	3.043	2.973	0.115	3.86
	2.964	2.997	2.952			
1	1.013	1.056	0.980	1.029	0.042	4.12
	1.075	1.075	0.973			
0.5	0.515	0.473	0.483	0.492	0.021	4.18
	0.525	0.483	0.472			
0.1	0.103	0.108	0.108	0.102	0.005	5.10
	0.094	0.099	0.098			
0.05	0.055	0.052	0.054	0.051	0.003	6.57
	0.051	0.046	0.047			

Table 9 Ferulic acid 在家兔血漿中之間日內(Interday)精確性試驗

Spiked Conc. ($\mu\text{g/ml}$)	No.1	No.2	No.3	Mean	S. D.	C.V.(%)
	No.4	No.5	No.6			
100	99.752	100.432	100.532	99.411	1.057	1.06
	98.751	97.453	99.543			
50	50.290	48.609	49.422	49.286	0.597	1.21
	49.752	48.892	48.753			
30	29.953	28.754	30.543	29.678	0.704	2.37
	30.321	29.752	28.743			
10	10.378	10.119	10.541	10.130	0.251	2.48
	9.985	9.845	9.914			
5	5.212	5.254	4.974	5.057	0.126	2.49
	4.953	4.953	4.997			
3	3.114	3.049	2.897	2.978	0.087	2.92
	2.859	2.953	2.997			
1	1.001	0.988	1.079	1.006	0.034	3.34
	0.997	0.978	0.991			
0.5	0.499	0.474	0.530	0.498	0.019	3.73
	0.489	0.485	0.513			
0.1	0.108	0.095	0.097	0.100	0.006	5.72
	0.105	0.103	0.092			
0.05	0.047	0.053	0.049	0.051	0.003	6.20
	0.052	0.056	0.048			

Table 10 Ferulic acid 定量的極限試驗(Limit of Quantitation)

Spiked Conc. ($\mu\text{g/ml}$)	1	2	3	Mean	S.D.	C.V.%
	4	5	6			
100	100.764	97.942	102.638	100.234	1.399	1.40
	100.450	99.753	99.854			
50	48.618	48.875	48.753	49.425	0.740	1.50
	49.519	50.345	50.437			
30	29.543	29.531	30.455	29.504	0.676	2.29
	28.743	30.157	28.592			
10	9.753	9.854	9.779	10.020	0.232	2.31
	10.325	10.154	10.254			
5	4.975	4.854	4.954	4.983	0.124	2.50
	4.853	5.217	5.043			
3	2.945	3.152	3.045	2.989	0.101	3.39
	2.853	3.043	2.897			
1	1.047	0.944	0.936	0.974	0.040	4.08
	0.989	0.937	0.989			
0.5	0.482	0.489	0.478	0.496	0.022	4.37
	0.522	0.474	0.529			
0.1	0.092	0.094	0.100	0.098	0.006	6.01
	0.092	0.108	0.102			
0.05	0.044	0.044	0.050	0.049	0.005	9.86
	0.047	0.058	0.051			

Table 11 Ferulic acid 在家兔血漿中於 25 之安定性試驗

Time	0.05 $\mu\text{g/ml}$	1 $\mu\text{g/ml}$	100 $\mu\text{g/ml}$
0-hr	0.051 \pm 0.0024	1.005 \pm 0.0274	100.451 \pm 0.7720
1-hr	0.048 \pm 0.0022	1.032 \pm 0.0202	99.653 \pm 0.1410
3-hr	0.051 \pm 0.0025	0.988 \pm 0.0291	99.860 \pm 0.0731
6-hr	0.050 \pm 0.0027	0.984 \pm 0.0218	99.778 \pm 0.2542
12-hr	0.052 \pm 0.0022	0.990 \pm 0.0080	99.903 \pm 0.6027
24-hr	0.049 \pm 0.0010	0.993 \pm 0.0052	99.749 \pm 0.3569
36-hr	0.049 \pm 0.0009	0.968 \pm 0.0166	99.680 \pm 0.8393

Table 12 Ferulic acid 在家兔血漿中於 -30 之安定性試驗

Time	0.05 $\mu\text{g/ml}$	1 $\mu\text{g/ml}$	100 $\mu\text{g/ml}$
0-day	0.0504 \pm 0.0017	1.0307 \pm 0.0262	100.407 \pm 0.8019
1-day	0.0509 \pm 0.0009	0.9990 \pm 0.0046	100.044 \pm 0.3458
3-day	0.0512 \pm 0.0014	0.9960 \pm 0.0009	99.051 \pm 1.2207
6-day	0.0500 \pm 0.0010	0.9946 \pm 0.0076	99.714 \pm 0.1975
10-day	0.0495 \pm 0.0011	0.9914 \pm 0.0057	99.566 \pm 0.1298
15-day	0.0490 \pm 0.0005	0.9820 \pm 0.0055	98.983 \pm 0.6875

Table 13 六隻家兔靜脈注射 2 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)

Time (min.)	No.1	No.2	No.3	No.4	No.5	No.6	Mean	S.D.
2.5	5.235	4.777	5.577	5.257	6.695	5.806	5.558	0.657
5	3.832	4.094	4.226	3.771	4.419	4.035	4.063	0.242
10	1.860	2.039	2.088	1.998	2.803	1.802	2.098	0.362
15	1.047	1.223	1.195	1.146	1.514	1.089	1.202	0.166
20	0.774	0.904	0.765	0.721	0.804	0.665	0.772	0.081
30	0.493	0.620	0.453	0.468	0.465	0.397	0.483	0.074
45	0.368	0.394	0.305	0.344	0.289	0.281	0.330	0.046
60	0.189	0.217	0.179	0.191	0.237	0.163	0.196	0.027
75	0.135	0.112	0.125	0.141	0.179	0.112	0.134	0.025
90	0.096	0.081	0.089	0.094	0.117	0.085	0.094	0.013
105	0.069	0.068	0.062	0.064	0.094	0.065	0.070	0.012
120	0.053	0.050	0.052	0.055	0.064	0.051	0.054	0.005

Table 14 六隻家兔靜脈注射 10 mg/kg 之 Ferulic acid 標準品後血中
濃度值($\mu\text{g/ml}$)

Time (min..)	No.1	No.2	No.3	No.4	No.5	No.6	Mean	S.D.
2.5	21.956	22.948	20.681	27.195	23.614	23.016	23.235	2.005
5	19.991	21.791	15.895	23.019	18.624	18.926	19.708	2.299
10	11.057	13.453	9.534	13.981	12.013	12.137	12.029	1.473
15	7.813	8.542	5.438	7.366	8.102	8.938	7.700	1.129
20	5.492	5.417	3.894	5.635	4.782	5.175	5.066	0.591
30	2.569	3.618	2.126	3.412	2.716	2.982	2.904	0.504
45	1.684	2.219	1.113	1.845	1.469	1.589	1.653	0.339
60	0.851	1.176	0.698	1.075	0.837	0.912	0.925	0.158
75	0.518	0.618	0.486	0.639	0.407	0.516	0.531	0.079
90	0.326	0.419	0.351	0.357	0.286	0.257	0.333	0.052
105	0.215	0.285	0.224	0.265	0.199	0.178	0.228	0.037
120	0.164	0.186	0.169	0.211	0.156	0.128	0.169	0.026
150	0.087	0.098	0.083	0.124	0.081	0.091	0.094	0.015
180	0.051	0.055	0.053	0.073	0.051	0.054	0.056	0.008

Table 15 六隻家兔靜脈注射 50 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)

Time (min.)	No.1	No.2	No.3	No.4	No.5	No.6	Mean	S.D.
2.5	95.396	84.926	90.053	93.583	97.528	88.027	91.586	4.758
5	81.627	72.187	79.055	84.031	88.472	81.692	81.177	5.425
10	60.964	51.045	53.039	57.041	63.466	57.913	57.245	4.672
15	35.269	31.329	36.292	35.338	41.476	38.791	36.416	3.453
20	28.264	23.681	27.681	28.467	29.302	29.905	27.883	2.204
30	14.943	12.168	14.106	15.071	18.253	17.508	15.342	2.236
45	7.968	6.286	7.567	8.135	9.437	9.459	8.142	1.201
60	4.209	3.439	4.031	4.281	4.726	5.238	4.321	0.613
75	2.021	1.542	1.907	2.856	2.531	3.148	2.334	0.613
90	1.538	1.035	1.541	1.892	1.341	2.132	1.580	0.390
105	1.076	0.791	1.058	1.349	0.959	1.371	1.101	0.225
120	0.743	0.576	0.715	0.843	0.740	0.937	0.759	0.122
150	0.438	0.379	0.448	0.447	0.461	0.498	0.445	0.039
180	0.238	0.205	0.299	0.278	0.302	0.315	0.273	0.043
210	0.128	0.116	0.166	0.149	0.181	0.186	0.154	0.028
240	0.081	0.075	0.091	0.084	0.099	0.103	0.089	0.011
270	0.053	0.051	0.058	0.055	0.052	0.068	0.056	0.006

Table 16 六隻家兔靜脈注射不同劑量之 Ferulic acid 標準品後平均
血中濃度值($\mu\text{g/ml}$)

Time (min.)	Dose		
	2 mg/kg	10 mg/kg	50 mg/kg
2.5	5.558 \pm 0.657	23.235 \pm 2.005	91.586 \pm 4.758
5	4.063 \pm 0.242	19.708 \pm 2.299	81.177 \pm 5.425
10	2.098 \pm 0.362	12.029 \pm 1.473	57.245 \pm 4.672
15	1.202 \pm 0.166	7.700 \pm 1.129	36.416 \pm 3.453
20	0.772 \pm 0.081	5.066 \pm 0.591	27.883 \pm 2.204
30	0.483 \pm 0.074	2.904 \pm 0.504	15.342 \pm 2.236
45	0.330 \pm 0.046	1.653 \pm 0.339	8.142 \pm 1.201
60	0.196 \pm 0.027	0.925 \pm 0.158	4.321 \pm 0.613
75	0.134 \pm 0.025	0.531 \pm 0.079	2.334 \pm 0.613
90	0.094 \pm 0.013	0.333 \pm 0.052	1.580 \pm 0.390
105	0.070 \pm 0.012	0.228 \pm 0.037	1.101 \pm 0.225
120	0.054 \pm 0.005	0.169 \pm 0.026	0.759 \pm 0.122
150	N.D.	0.094 \pm 0.015	0.445 \pm 0.039
180	N.D.	0.056 \pm 0.008	0.273 \pm 0.043
210	N.D.	N.D.	0.154 \pm 0.028
240	N.D.	N.D.	0.089 \pm 0.011
270	N.D.	N.D.	0.056 \pm 0.006

Data are expressed as Mean \pm S.D.

N.D. are expressed as not detectable

Table 17 六隻家兔靜脈注射 2 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 LAGRAN-P 程式處理之相關藥動學參數

Parametrs	No. 1	No. 2	No. 3	No. 4	No.5	No.6	Mean	S.D.
AUCp ($\mu\text{g}\cdot\text{min/ml}$)	58.994	64.467	60.579	58.698	69.656	55.659	61.342	4.985
AUCtotal($\mu\text{g}\cdot\text{min/ml}$)	61.467	66.650	63.037	61.214	72.598	58.326	63.882	5.063
Cl (l/min)	0.033	0.030	0.032	0.033	0.028	0.032	0.031	0.002
$\lambda\text{-z}$ (min^{-1})	0.021	0.023	0.021	0.022	0.022	0.020	0.022	0.001
$T_{1/2}$ (min.)	32.342	30.264	32.756	31.695	31.863	32.013	31.822	0.851
VDss (l)	0.971	0.841	0.886	0.968	0.802	0.919	0.898	0.068
MRT (min)	29.836	28.024	27.910	29.626	29.100	29.047	28.924	0.801

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Table 18 六隻家兔靜脈注射 10 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 LAGRAN-P 程式處理之相關藥動學參數

Parametrs	No. 1	No.2	No.3	No. 4	No.5	No. 6	Mean	S.D.
AUCp ($\mu\text{g}\cdot\text{min/ml}$)	324.409	378.423	258.820	376.577	314.668	329.890	330.47	44.38
AUCtotal($\mu\text{g}\cdot\text{min/ml}$)	327.028	381.113	261.576	380.070	317.323	332.633	333.29	44.53
Cl (l/min)	0.031	0.026	0.038	0.027	0.032	0.030	0.031	0.004
$\lambda\text{-z}$ (min^{-1})	0.019	0.020	0.019	0.019	0.019	0.020	0.019	0.001
$T_{1/2}$ (min.)	35.598	34.126	36.042	35.175	36.079	35.200	35.370	0.724
VDss (l)	0.768	0.684	1.021	0.694	0.773	0.743	0.781	0.123
MRT (min)	25.106	26.078	26.698	25.403	24.541	24.702	25.421	0.831

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Table 19 六隻家兔靜脈注射 50 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 LAGRAN-P 程式處理之相關藥動學參數

Parametrs	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
AUCp ($\mu\text{g}\cdot\text{min/ml}$)	1568.9	1321.8	1496.9	1593.0	1727.4	1690.4	1566.4	146.1
AUCtotal($\mu\text{g}\cdot\text{min/ml}$)	1571.8	1324.8	1500.3	1596.3	1730.3	1694.3	1569.6	146.2
Cl (l/min)	0.032	0.038	0.033	0.031	0.029	0.030	0.032	0.003
$\lambda\text{-z}$ (min^{-1})	0.018	0.017	0.017	0.017	0.018	0.017	0.017	0.001
$T_{1/2}$ (min.)	38.529	41.459	40.584	41.721	39.538	39.610	40.240	1.234
VDss (l)	0.817	0.945	0.884	0.846	0.752	0.841	0.848	0.065
MRT (min)	25.696	25.047	26.512	27.020	26.033	28.484	26.465	1.198

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Table 20 六隻家兔靜脈注射 2 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 WINNOLIN 程式處理之相關藥動學參數

Parametrs	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
A($\mu\text{g/ml}$)	6.933	5.890	7.395	6.809	8.514	8.117	7.276	0.950
B($\mu\text{g/ml}$)	0.780	0.781	0.555	0.725	0.653	0.690	0.697	0.086
$\alpha(\text{min}^{-1})$	0.168	0.133	0.147	0.158	0.144	0.179	0.155	0.017
$\beta(\text{min}^{-1})$	0.022	0.021	0.019	0.021	0.019	0.023	0.021	0.002
AUC($\mu\text{g}\cdot\text{min/ml}$)	77.597	80.555	80.424	77.463	94.000	76.038	81.013	6.607
K10-HL(min)	6.973	8.369	7.011	7.128	7.108	5.984	7.096	0.759
α -HL(min)	4.132	5.198	4.730	4.387	4.803	3.878	4.521	0.483
β -HL(min)	32.216	32.273	37.394	32.875	37.168	30.759	33.781	2.800
K10(min)	0.099	0.083	0.099	0.097	0.098	0.116	0.099	0.010
K12(min)	0.054	0.037	0.039	0.048	0.038	0.051	0.044	0.007
K21(min)	0.036	0.035	0.027	0.034	0.028	0.035	0.032	0.004
Volume(l)	0.570	0.600	0.579	0.611	0.567	0.545	0.579	0.024
Cmax($\mu\text{g/ml}$)	7.714	6.672	7.951	7.533	9.167	8.808	7.974	0.903
Cl(l/min)	0.057	0.050	0.057	0.059	0.055	0.063	0.057	0.004
MRT(min)	24.899	25.141	24.379	24.565	24.316	21.214	24.086	1.441
VDss(l)	1.412	1.248	1.394	1.459	1.345	1.339	1.366	0.073

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Table 21 六隻家兔靜脈注射 10 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 WINNOLIN 程式處理之相關藥動學參數

Parametrs	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
A($\mu\text{g/ml}$)	26.219	27.355	24.727	32.894	26.826	25.738	27.293	2.638
B($\mu\text{g/ml}$)	2.354	2.457	2.811	3.099	3.093	2.977	2.799	0.296
$\alpha(\text{min}^{-1})$	0.097	0.089	0.124	0.110	0.104	0.094	0.103	0.012
$\beta(\text{min}^{-1})$	0.020	0.018	0.023	0.020	0.024	0.024	0.021	0.002
AUC($\mu\text{g}\cdot\text{min/ml}$)	390.400	448.328	320.714	456.416	384.843	398.946	399.941	44.959
K10-HL(min)	9.471	10.424	8.073	8.790	8.916	9.630	9.217	0.739
α -HL(min)	7.182	7.809	5.570	6.329	6.679	7.352	6.820	0.732
β -HL(min)	34.966	39.544	30.087	34.901	28.316	29.317	32.855	3.962
K10(min)	0.073	0.066	0.086	0.079	0.078	0.072	0.076	0.006
K12(min)	0.017	0.016	0.028	0.023	0.018	0.015	0.020	0.005
K21(min)	0.026	0.023	0.033	0.028	0.033	0.031	0.029	0.004
Volume(l)	0.770	0.738	0.726	0.833	0.802	0.801	0.778	0.038
Cmax($\mu\text{g/ml}$)	28.573	29.811	27.538	35.993	29.919	28.716	30.092	2.759
Cl(l/min)	0.056	0.049	0.062	0.066	0.062	0.058	0.059	0.005
MRT(min)	22.551	25.579	21.492	23.225	19.885	20.610	22.224	1.870
VDss(l)	1.271	1.255	1.340	1.527	1.240	1.188	1.304	0.109

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Table 22 六隻家兔靜脈注射 50 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 WINNOLIN 程式處理之相關藥動學參數

Parametrs	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
A($\mu\text{g/ml}$)	108.61	97.64	100.74	106.41	110.05	97.45	103.48	5.586
B($\mu\text{g/ml}$)	7.812	6.680	9.526	9.852	9.281	9.856	8.835	1.300
$\alpha(\text{min}^{-1})$	0.078	0.081	0.079	0.081	0.073	0.070	0.077	0.004
$\beta(\text{min}^{-1})$	0.018	0.019	0.020	0.018	0.019	0.018	0.019	0.001
AUC($\mu\text{g}\cdot\text{min/ml}$)	1832.8	1557.6	1751.7	1856.0	1989.5	1937.4	1820.8	153.3
K10-HL(min)	10.912	10.350	11.012	11.065	11.556	12.514	11.235	0.736
α -HL(min)	8.915	8.527	8.736	8.577	9.514	9.835	9.017	0.536
β -HL(min)	38.680	36.997	35.074	37.935	35.768	39.010	37.244	1.588
K10(min)	0.064	0.067	0.063	0.063	0.060	0.055	0.062	0.004
K12(min)	0.010	0.010	0.011	0.013	0.009	0.010	0.011	0.001
K21(min)	0.022	0.023	0.025	0.024	0.024	0.023	0.023	0.001
Volume(l)	1.031	0.959	0.998	0.989	1.048	1.025	1.008	0.032
Cmax($\mu\text{g/ml}$)	116.42	104.32	110.26	116.27	119.33	107.31	112.32	5.914
Cl(l/min)	0.065	0.064	0.063	0.062	0.063	0.057	0.062	0.003
MRT(min)	23.075	21.704	23.060	24.679	22.844	26.239	23.600	1.604
VDss(l)	1.511	1.393	1.448	1.529	1.435	1.490	1.468	0.051

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Table 23 生體可用率實驗中六隻家兔靜脈注射 50 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)

Time (min.)	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
5	71.416	64.391	80.268	68.201	74.391	75.627	72.382	5.640
10	60.794	51.093	65.268	51.093	59.529	64.375	58.692	6.263
15	42.076	34.268	51.971	39.407	44.761	49.017	43.583	6.446
20	33.615	26.716	38.465	28.681	31.684	35.946	32.518	4.414
30	21.706	16.432	26.947	16.039	19.384	23.036	20.591	4.174
45	12.169	8.139	15.136	8.943	11.096	14.735	11.703	2.894
60	5.468	3.567	7.056	3.675	5.586	7.239	5.432	1.581
90	1.891	1.973	2.961	1.387	2.173	2.712	2.183	0.574
120	0.854	0.801	1.394	0.611	0.805	1.171	0.939	0.287
150	0.386	0.436	0.735	0.391	0.489	0.672	0.518	0.150
180	0.192	0.231	0.367	0.219	0.248	0.391	0.275	0.083
210	0.126	0.141	0.180	0.147	0.162	0.188	0.157	0.024
240	0.079	0.083	0.102	0.087	0.095	0.117	0.094	0.014
270	0.053	0.057	0.066	0.054	0.063	0.073	0.061	0.008

Table 24 生體可用率實驗中六隻家兔肌肉注射 50 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)

Time (min.)	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
5	15.462	16.981	14.265	12.187	16.273	14.265	14.906	1.715
10	23.976	24.297	20.923	19.156	21.596	20.923	21.812	1.977
15	27.905	29.156	32.245	23.195	25.534	32.245	28.380	3.625
20	24.638	25.219	30.298	20.597	23.738	30.298	25.798	3.833
30	20.519	23.518	23.795	16.518	18.437	23.795	21.097	3.124
45	11.652	14.594	15.268	11.056	12.318	15.268	13.359	1.903
60	7.462	8.139	9.417	6.518	6.792	9.417	7.958	1.262
90	3.019	4.352	5.538	2.957	3.324	5.538	4.121	1.206
120	1.235	2.038	2.288	1.654	1.712	2.288	1.869	0.413
150	0.579	0.894	0.915	0.786	0.972	0.915	0.844	0.143
180	0.387	0.476	0.401	0.361	0.531	0.401	0.426	0.064
210	0.221	0.283	0.205	0.234	0.289	0.205	0.240	0.038
240	0.134	0.161	0.135	0.139	0.168	0.135	0.145	0.015
270	0.086	0.094	0.076	0.087	0.102	0.076	0.087	0.010
300	0.053	0.059	0.051	0.054	0.065	0.051	0.056	0.006

Table 25 生體可用率實驗中六隻家兔口服投與 100 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)

Time (min.)	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
10	11.298	10.213	13.289	9.856	8.372	15.647	11.446	2.629
20	15.462	14.234	18.628	13.569	12.681	18.598	15.529	2.556
30	17.795	16.058	20.428	15.309	14.697	21.168	17.576	2.714
45	11.089	10.463	14.359	11.639	10.289	15.106	12.158	2.065
60	8.657	7.641	10.126	8.128	7.913	10.694	8.860	1.259
90	4.798	4.139	5.547	4.479	5.078	5.139	4.863	0.503
120	2.038	2.467	3.561	3.056	2.973	2.654	2.792	0.527
150	1.058	1.297	1.741	1.541	1.453	1.216	1.384	0.245
180	0.549	0.615	0.906	0.813	0.763	0.726	0.729	0.130
210	0.394	0.376	0.534	0.431	0.312	0.386	0.406	0.074
240	0.245	0.268	0.336	0.296	0.231	0.261	0.273	0.038
270	0.147	0.149	0.206	0.165	0.139	0.159	0.161	0.024
300	0.099	0.094	0.131	0.107	0.094	0.102	0.105	0.014
360	0.051	0.051	0.059	0.054	0.052	0.053	0.053	0.003

Table 26 生體可用率實驗中六隻家兔靜脈注射、肌肉注射及口服投與 Ferulic acid 標準品後之平均血中濃度值($\mu\text{g/ml}$)

Time (min.)	I.V. (50 mg/kg)	I.M. (50 mg/kg)	P.O. (100 mg/kg)
5	72.382 \pm 5.640	14.906 \pm 1.715	-
10	58.692 \pm 6.263	21.812 \pm 1.977	11.446 \pm 2.629
15	43.583 \pm 6.446	28.380 \pm 3.625	-
20	32.518 \pm 4.414	25.798 \pm 3.833	15.529 \pm 2.556
30	20.591 \pm 4.174	21.097 \pm 3.124	17.576 \pm 2.714
45	11.703 \pm 2.894	13.359 \pm 1.903	12.158 \pm 2.065
60	5.432 \pm 1.581	7.958 \pm 1.262	8.860 \pm 1.259
90	2.183 \pm 0.574	4.121 \pm 1.206	4.863 \pm 0.503
120	0.939 \pm 0.287	1.869 \pm 0.413	2.792 \pm 0.527
150	0.518 \pm 0.150	0.844 \pm 0.143	1.384 \pm 0.245
180	0.275 \pm 0.083	0.426 \pm 0.064	0.729 \pm 0.130
210	0.157 \pm 0.024	0.240 \pm 0.038	0.406 \pm 0.074
240	0.094 \pm 0.014	0.145 \pm 0.015	0.273 \pm 0.038
270	0.061 \pm 0.008	0.087 \pm 0.010	0.161 \pm 0.024
300	N.D.	0.056 \pm 0.006	0.105 \pm 0.014
360	N.D.	N.D.	0.053 \pm 0.003

Data are expressed as Mean \pm S.D.

N.D. are expressed as not detectable

Table 27 生體可用率實驗中六隻家兔靜脈注射 50 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 LAGRAN-P 程式處理之相關藥動學參數

Parametrs	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
AUCp ($\mu\text{g}\cdot\text{min/ml}$)	1583.3	1264.7	1911.9	1293.4	1549.6	1802.0	1567.5	261.2
AUCtotal($\mu\text{g}\cdot\text{min/ml}$)	1586.2	1267.9	1915.4	1296.7	1553.3	1805.9	1570.9	261.3
Cl (l/min)	0.032	0.039	0.026	0.039	0.032	0.028	0.033	0.005
λ -z (min^{-1})	0.018	0.018	0.019	0.016	0.017	0.019	0.018	0.001
$T_{1/2}$ (min.)	38.140	38.945	36.377	42.709	40.247	36.653	38.845	2.379
VDss (l)	0.970	1.246	0.881	1.156	1.021	0.939	1.036	0.139
MRT (min)	30.775	31.603	33.751	29.974	31.729	33.905	31.956	1.582

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Table 28 生體可用率實驗中六隻家兔肌肉注射 50 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 LAGRAN-P 程式處理之相關藥動學參數

Parametrs	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
AUCp ($\mu\text{g}\cdot\text{min/ml}$)	1234.5	1419.8	1528.8	1085.0	1214.1	1528.8	1335.2	184.1
AUCtotal($\mu\text{g}\cdot\text{min/ml}$)	1238.0	1423.3	1531.9	1088.5	1218.2	1531.9	1338.6	183.9
Cl (l/min)	0.040	0.035	0.033	0.046	0.041	0.033	0.038	0.005
λ -z (min^{-1})	0.015	0.017	0.016	0.016	0.016	0.016	0.016	0.000
$T_{1/2}$ (min.)	44.828	41.420	42.714	43.977	43.788	42.714	43.240	1.203
VDss (l)	1.781	1.670	1.570	2.209	1.986	1.570	1.798	0.255
MRT (min)	44.105	47.568	48.090	48.091	48.377	48.090	47.387	1.629

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Table 29 生體可用率實驗中六隻家兔口服投與 100 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 LAGRAN-P 程式處理之相關藥動學參數

Parametrs	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
AUC _p ($\mu\text{g}\cdot\text{min/ml}$)	1073.0	1002.6	1335.6	1056.4	1015.7	1306.5	1131.6	149.2
AUC _{total} ($\mu\text{g}\cdot\text{min/ml}$)	1077.4	1007.0	1339.9	1060.8	1020.6	1310.9	1136.1	149.1
Cl (l/min)	0.093	0.099	0.075	0.094	0.098	0.076	0.089	0.011
λ -z (min^{-1})	0.012	0.012	0.014	0.012	0.011	0.012	0.012	0.001
T _{1/2} (min.)	59.428	59.401	50.191	56.498	64.323	57.646	57.914	4.632
VD _{ss} (l)	5.777	6.448	4.892	6.439	6.738	4.628	5.820	0.884
MRT (min)	62.244	64.936	65.541	68.307	68.762	60.665	65.076	3.217

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Table 30 生體可用率實驗中六隻家兔靜脈注射 50 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 WINNOLIN 程式處理之相關藥動學參數

Parametrs	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
A($\mu\text{g/ml}$)	86.202	80.453	91.099	86.095	91.113	88.751	87.285	4.015
B($\mu\text{g/ml}$)	7.524	7.877	10.956	5.319	8.698	9.692	8.344	1.939
$\alpha(\text{min}^{-1})$	0.053	0.065	0.050	0.061	0.060	0.052	0.057	0.006
$\beta(\text{min}^{-1})$	0.019	0.019	0.019	0.018	0.018	0.018	0.019	0.001
AUC($\mu\text{g}\cdot\text{min/ml}$)	2002.2	1653.2	2383.0	1708.0	2004.3	2251.8	2000.420	288.324
K10-HL(min)	14.807	12.973	16.185	12.951	13.919	15.855	14.448	1.402
α -HL(min)	12.989	10.631	13.796	11.354	11.618	13.426	12.302	1.275
β -HL(min)	35.640	36.891	36.045	38.798	38.028	38.100	37.250	1.257
K10(min)	0.047	0.053	0.043	0.054	0.050	0.044	0.048	0.005
K12(min)	0.004	0.008	0.004	0.005	0.006	0.005	0.005	0.001
K21(min)	0.022	0.023	0.023	0.020	0.022	0.021	0.022	0.001
Volume(l)	1.174	1.132	1.178	1.149	1.102	1.219	1.159	0.041
Cmax($\mu\text{g/ml}$)	93.725	88.330	102.055	91.414	99.811	98.444	95.630	5.317
Cl(l/min)	0.055	0.060	0.051	0.061	0.055	0.053	0.056	0.006
MRT(min)	25.053	24.945	27.578	23.283	25.832	27.792	25.747	1.717
VDss(l)	1.376	1.509	1.273	1.431	1.418	1.481	1.415	0.084

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Table 31 生體可用率實驗中六隻家兔肌肉注射 50 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 WINNOLIN 程式處理之相關藥動學參數

Parametrs	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
A($\mu\text{g/ml}$)	286.686	144.147	234.752	372.962	361.867	234.752	272.528	86.723
B($\mu\text{g/ml}$)	7.079	11.805	9.030	7.353	11.438	9.030	9.289	1.985
α (min^{-1})	0.075	0.079	0.066	0.071	0.077	0.066	0.072	0.005
β (min^{-1})	0.060	0.052	0.050	0.062	0.067	0.050	0.057	0.007
AUC($\mu\text{g}\cdot\text{min/ml}$)	0.016	0.017	0.016	0.015	0.017	0.016	0.016	0.001
K10-HL(min)	0.048	0.040	0.041	0.045	0.045	0.041	0.043	0.003
α -HL(min)	0.008	0.007	0.005	0.011	0.014	0.005	0.008	0.003
β -HL(min)	0.020	0.023	0.020	0.020	0.024	0.020	0.021	0.002
K10(min)	1282.336	1458.207	1566.013	1139.950	1271.216	1566.013	1380.623	175.677
K12(min)	14.456	17.457	16.840	15.271	15.336	16.840	16.033	1.173
K21(min)	9.269	8.790	10.427	9.823	9.009	10.427	9.624	0.711
Volume(l)	11.515	13.276	13.822	11.202	10.403	13.822	12.340	1.483
Cmax($\mu\text{g/ml}$)	43.897	39.625	42.394	47.333	41.960	42.394	42.934	2.560
Cl(l/min)	1.870	2.332	1.862	2.416	2.263	1.862	2.101	0.263
MRT(min)	15.664	16.637	18.171	16.220	15.347	18.171	16.702	1.222
VDss(l)	26.135	27.304	28.235	21.425	24.405	28.235	25.956	2.652

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Table 32 生體可用率實驗中六隻家兔口服投與 100 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 WINNOLIN 程式處理之相關藥動學參數

Parametrs	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.
A($\mu\text{g/ml}$)	326.58	164.82	163.77	139.83	76.02	395.97	211.17	122.65
B($\mu\text{g/ml}$)	3.290	3.718	7.183	5.793	3.979	4.472	4.74	1.47
$\alpha(\text{min}^{-1})$	0.046	0.050	0.051	0.048	0.048	0.047	0.05	0.00
$\beta(\text{min}^{-1})$	0.041	0.040	0.039	0.038	0.032	0.042	0.04	0.00
AUC($\mu\text{g}\cdot\text{min/ml}$)	0.011	0.010	0.012	0.012	0.010	0.012	0.01	0.00
K10-HL(min)	0.035	0.032	0.030	0.029	0.026	0.036	0.03	0.00
α -HL(min)	0.004	0.006	0.005	0.005	0.004	0.004	0.00	0.00
β -HL(min)	0.013	0.013	0.015	0.015	0.013	0.014	0.01	0.00
K10(min)	1141.4	1076.9	1426.1	1129.8	1080.6	1406.8	1210.28	161.88
K12(min)	19.882	21.698	22.936	23.896	26.417	19.511	22.39	2.60
K21(min)	14.920	14.000	13.637	14.585	14.356	14.600	14.35	0.46
Volume(l)	16.842	17.301	17.699	18.299	21.490	16.547	18.03	1.81
Cmax($\mu\text{g/ml}$)	64.647	68.449	58.645	60.106	66.301	60.262	63.07	3.95
Cl(l/min)	6.031	6.686	5.337	6.713	7.406	4.802	6.16	0.97
MRT(min)	23.730	23.558	23.877	25.216	26.494	23.296	24.36	1.24
VD _{ss} (l)	15.994	14.566	18.911	14.202	13.101	20.151	16.15	2.80

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Table 33 六隻家兔靜脈注射不同劑量(2 . 10 . 50 mg/kg)之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 LAGRAN-P 程式處理之相關動力學參數以 One Way ANOVA 比較之結果

Parameter	2 mg/kg	10 mg/kg	50 mg/kg	F-value	$\alpha=0.05$	Result
AUC _{TOTAL}	63.88 \pm 5.06	333.29 \pm 44.53	1569.6 \pm 146.1	496.54	3.68	P<0.05
CL	0.031 \pm 0.002	0.031 \pm 0.004	0.032 \pm 0.003	0.315	3.68	N.S.
t _{1/2}	31.82 \pm 0.85	35.37 \pm 0.72	40.24 \pm 1.23	116.032	3.68	P<0.05
VD _{SS}	0.90 \pm 0.07	0.78 \pm 0.12	0.85 \pm 0.07	2.607	3.68	N.S.
MRT	28.92 \pm 0.80	25.42 \pm 0.83	26.47 \pm 1.20	21.060	3.68	P<0.05

Data are expressed as Mean \pm S.D.

N.S.:Non Significant difference

Table 34 家兔經二次靜脈注射 50 mg/kg 之 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 WINNONLIN 程式處理之相關動力學參數以 t-test 比較之結果

Parameter	I.V. (I)	I.V. (II)	t-value	$t_{0.975}$	Result
AUC_{TOTAL}	1820.8 \pm 153.3	200.4 \pm 288.3	1.347	2.228	N.S.
$t_{1/2}$	37.24 \pm 1.59	37.25 \pm 1.26	0.08	2.228	N.S.
CL	0.062 \pm 0.003	0.056 \pm 0.006	2.203	2.228	N.S.
VD_{SS}	1.47 \pm 0.05	1.42 \pm 0.08	1.321	2.228	N.S.

Data are expressed as Mean \pm S.D.

N.S.:Non Significant difference

Table 35 六隻家兔靜脈注射、肌肉注射及口服投與 Ferulic acid 標準品後血中濃度值($\mu\text{g/ml}$)經 LAGRAN-P 程式處理之相關動力學參數以 One Way ANOVA 比較之結果

Parameter	I.V.	I.M.	P.O.	F-value	$\alpha=0.05$	Result
AUC_{PART}	1567.5 ± 261.2	1335.2 ± 184.1	1131.6 ± 149.2	6.271	3.68	$P < 0.05$
AUC_{TOTAL}	1570.9 ± 261.3	1338.6 ± 183.9	1136.1 ± 149.1	6.852	3.68	$P < 0.05$
CL	0.033 ± 0.005	0.038 ± 0.005	0.089 ± 0.011	100.65	3.68	$P < 0.05$
$t_{1/2}$	38.845 ± 2.379	43.240 ± 1.203	57.914 ± 4.632	19.36	3.68	$P < 0.05$
VD_{SS}	1.036 ± 0.139	1.798 ± 0.255	5.820 ± 0.884	137.52	3.68	$P < 0.05$
MRT	31.956 ± 1.582	47.387 ± 1.629	65.076 ± 3.217	318.84	3.68	$P < 0.05$

Data are expressed as Mean \pm S.D.

N.S.: Non Significant difference

Table 36 生體可用率實驗中六隻家兔肌肉注射及口服投藥後之生體可用率

F	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	Mean	S.D.	C.V. (%)
I.M.	0.61	0.65	0.63	0.56	0.54	0.70	0.61	0.06	10
PO	0.26	0.28	0.29	0.32	0.28	0.31	0.29	0.02	7

生體可用率公式請參閱附錄一