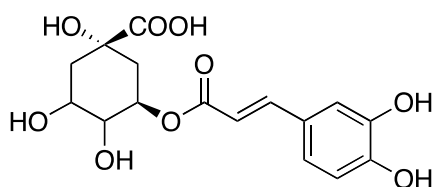


Chlorogenic acid



Chlorogenic acid

【化合物】 Chlorogenic acid

【測定機器】 HPLC

【対象】 動物（ラット）

【代謝実験】

Chlorogenic acid (ChA), a major phenolic compound in the Flos Lonicerae, is widely used in the traditional Chinese medicine practice. The purpose of this study is to report the pharmacokinetic parameters of ChA in rats after oral administration and explore its absorption profile briefly. A two-compartment model was proposed and validated through the program to explain the apparent triphasic phenomenon of ChA in rats after intragastric administration. A rapid absorption and a relatively slow distribution followed by a slower elimination phase were observed. At the administered doses of 200, 400 and 600 mg/kg, the values of absorption half-life ($t_{1/2\text{Ka}}$) were 10.23, 18.66 and 28.13 min. The values of distribution half-life ($t_{1/2\alpha}$) were 12.35, 31.04 and 39.19 min. And the values of elimination half-life ($t_{1/2\beta}$) were 231.64, 337.23 and 420.81 min. The volume of distribution at the three doses were 55.26, 35.56, 32.22 L/kg, respectively. The $\text{AUC}_{0-\infty}$ (area under the concentration-time curve) was not proportional to the administered dose. In the range of the doses examined, the absorption pharmacokinetics of ChA in rats was based on nonlinear kinetics. [Ren et al., *Arch. Pharm. Res.* **30**: 911-916 (2007)]

【代謝パラメータ】

Pharmacokinetic parameters of chlorogenic acid (200, 400 and 600 mg/kg,

n=6) in rats after intragastric administration

Parameter	Estimate (200 mg/kg)	Estimate (400 mg/kg)	Estimate (600 mg/kg)
$t_{1/2K_{\alpha}}$ (min)	10.23 $\pm$ 2.73	18.66 $\pm$ 4.89	28.13 $\pm$ 7.65
$t_{1/2_{\alpha}}$ (min)	12.35 $\pm$ 2.76	31.04 $\pm$ 6.37	39.19 $\pm$ 7.02
$t_{1/2_{\beta}}$ (min)	231.64 $\pm$ 27.07	337.23 $\pm$ 61.71	420.81 $\pm$ 88.17
Vol (L/Kg)	55.26 $\pm$ 9.99	35.56 $\pm$ 3.25	32.22 $\pm$ 5.40
CI (L/min/Kg)	0.48 $\pm$ 0.04	0.30 $\pm$ 0.04	0.23 $\pm$ 0.04
AUC _{0-∞} (mg/L min)	420.10 $\pm$ 40.45	1348.65 $\pm$ 188.78	2634.72 $\pm$ 524.43
K ₁₀ (l/min)	0.01 $\pm$ 0.002	0.01 $\pm$ 0.001	0.01 $\pm$ 0.001
K ₁₂ (1/min)	0.04 $\pm$ 0.02	0.01 $\pm$ 0.01	0.01 $\pm$ 0.001
K ₂₁ (l/rain)	0.02 $\pm$ 0.004	0.01 $\pm$ 0.002	0.004 $\pm$ 0.001
K _a (l/min)	0.07 $\pm$ 0.02	0.04 $\pm$ 0.02	0.03 $\pm$ 0.01
MRT (min)	292.36 $\pm$ 42.23	304.00 $\pm$ 44.44	356.37 $\pm$ 85.59
T _{max} (min)	23.00 $\pm$ 6.71	36.00 $\pm$ 8.22	45.00 $\pm$ 10.61
C _{max} (mg/L)	2.43 $\pm$ 0.39	9.21 $\pm$ 1.34	17.73 $\pm$ 2.76

Male Wistar rats received intragastric doses (200, 400 and 600 mg/kg) of chlorogenic acid. Blood samples (0.3 mL) were obtained at intervals. Plasma samples were obtained following centrifugation at 1000 x g for 10 min. Data are expressed as mean $\pm$ S.D.; $t_{1/2K_a}$, absorption half-life; $t_{1/2_{\alpha}}$, distribution half-life; $t_{1/2_{\beta}}$, elimination half-life; Vol, volume of distribution; CI, clearance; AUC_{0- ∞} , area under the concentration-time curve; K₁₀, elimination rate constant of central compartment; K₁₂, rate constant from central compartment to peripheral compartment; K₂₁, rate constant from peripheral compartment to central compartment; K_a, absorption rate constant; MRT, mean residence time; T_{max}, time to reach C_{max}; C_{max}, maximum plasma concentration. [Ren et al., *Arch. Pharm. Res.* **30**: 911-916 (2007)]

【参考文献】

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