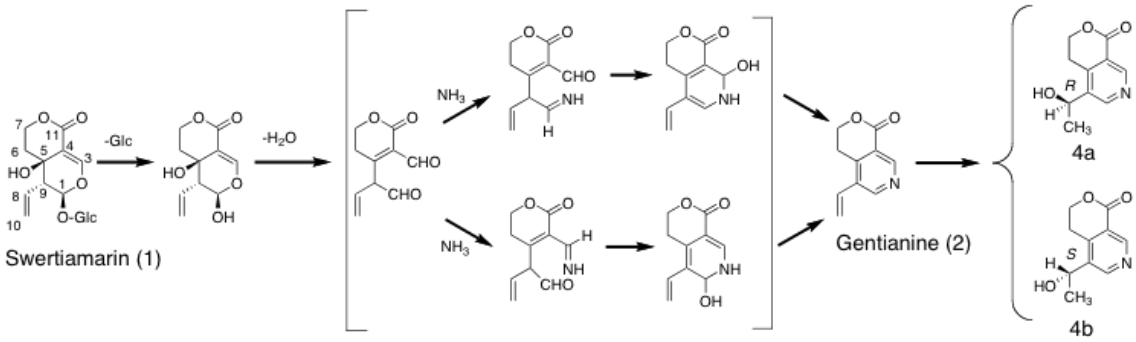
Swertiamarin 動物代謝



Metabolic processes of swertiamarin in rats

代謝実験

動物代謝　male Wistar rat

投与方法　経口投与

Gentianone (**3**)

Colorless needles. mp 166°C. ^{1}H-NMR ($CDCl_3$) δ: 9.38 (1H, s), 9.22 (1H, s), 4.53 (2H, t, *J* = 6.6 Hz), 3.47 (2H, t, *J* = 6.6 Hz), 2.71 (3H, s). ^{13}C-NMR ($CDCl_3$) δ: 197.7 (C-8), 162.8 (C-11), 154.3 (C-3), 154.0 (C-1), 148.9 (C-5), 129.7 (C-9), 122.4 (C-4), 66.3 (C-7), 29.1 (C-10), 25.7 (C-6). HR-EI-MS *m/z* 191.0564 $[M]^+$ (Calcd for $C_{10}H_9NO_3$ 191.0582), MS (ESI): *m/z*: 192$[M+H]^+$, 162$[M+H-HCHO]^+$. IR (KBr) cm^{-1}: 1729, 1691. UV λ_{max} nm: 226. [Wang *et al*., *J. Trad. Med.,* **25**, 29-34 (2008)]

(±)Gentianol (**4**)

Colorless oil. ^{1}H-NMR ($CDCl_3$) δ: 9.08 (1H, s), 8.77 (1H, s), 5.10 (1H, q, *J* = 6.6 Hz), 4.53 (2H, t, *J* = 6.6 Hz), 3.16 (2H, t, *J* = 6.6 Hz), 1.55 (3H, d, *J* = 6.6 Hz). ^{13}C-NMR ($CDCl_3$) δ: 163.4 (C-11), 150.7 (C-3), 150.1 (C-1), 145.4 (C-5), 136.7 (C-9), 120.9 (C-4), 66.2 (C-7), 65.6 (C-8), 23.8 (C-6), 23.9 (C-10). HR-EI-MS *m/z* 193.0732 $[M]^+$ (Calcd for $C_{10}H_{11}NO_3$ 193.0739), MS (ESI): *m/z*: 194$[M+H]^+$, 176$[M+H-H_2O]^+$, 146 $[M+H–H_2O–HCHO]^+$, 118$[M+H–H_2O–HCHO – CH_2=CH_2]^+$. IR (KBr) cm^{-1}: 3312, 1726. UV λ_{max} nm: 215. (*S*)-gentianol (**4b**) $[\alpha]_D^{20}$ = -64° (*c* = 1.0, $CHCl_3$). (*R*)-gentianol (**4a**) $[\alpha]_D^{20}$ = +59° (*c* = 1.0, $CHCl_3$). [Wang *et al*., *J. Trad. Med.,* **25**, 29-34 (2008)]

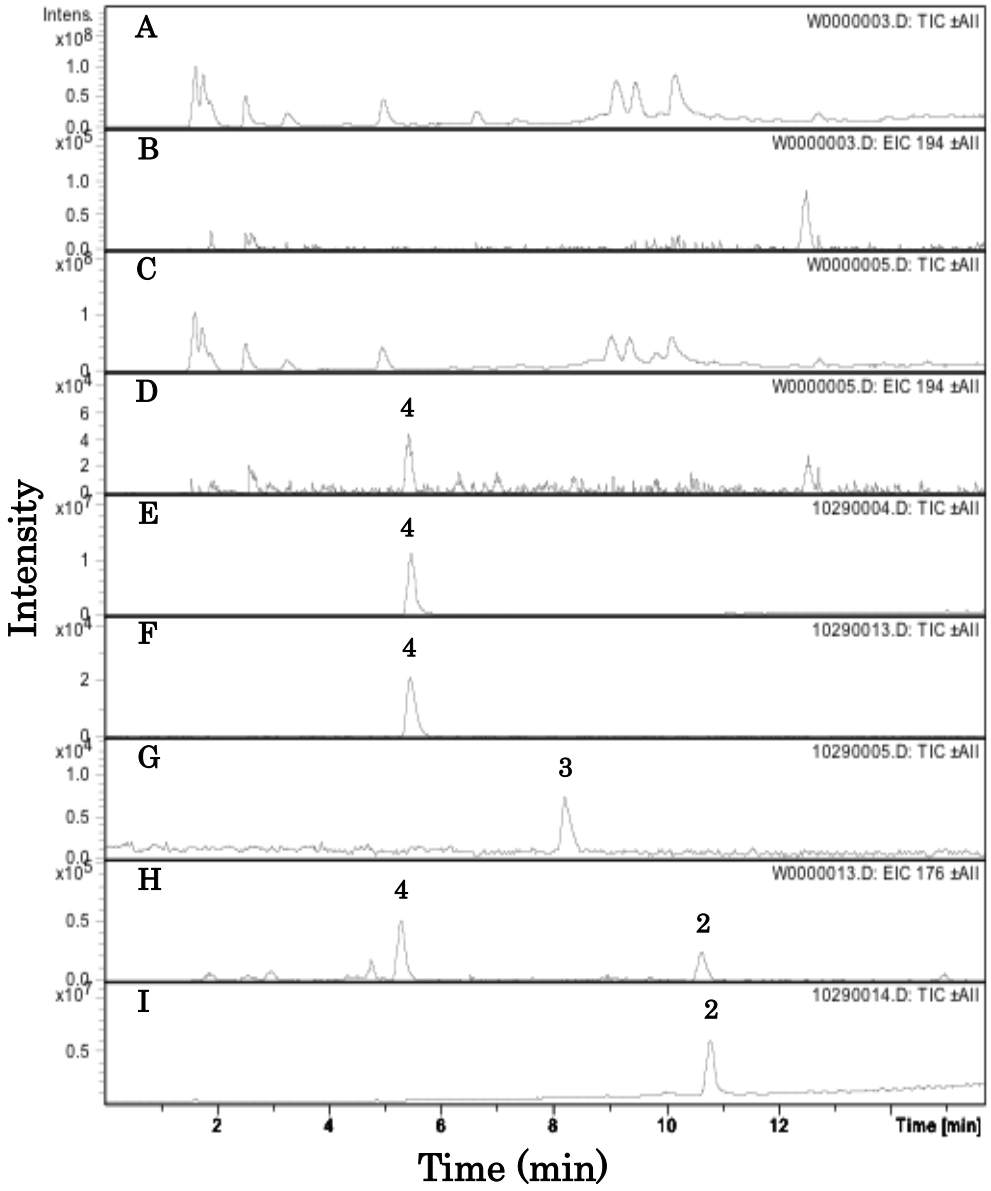


Fig. 1. Total ion current chromatogram (TIC) and extract ion chromatograms (EIC).

A, TIC of blank plasma; **B**, EIC at *m/z* 194 of blank plasma; **C**, TIC of plasma 6 h after oral administration of 200 mg/kg of swertiamarin (**1**); **D**, EIC at *m/z* 194 of the above plasma; **E**, TIC of (±)-gentianol (**4**); **F**, Selected ion monitoring (SIM) chromatogram at *m/z* 194 of the above plasma; **G**, SIM chromatogram of internal standard gentianone (**3**); **H**, EIC at *m/z* 176 of plasma after 4 h oral administration of 1000 mg/kg of **1** every 12 h; **I**, TIC of gentianine (**2**). [Wang *et al*., *J. Trad. Med.,* **25**, 29-34 (2008)]

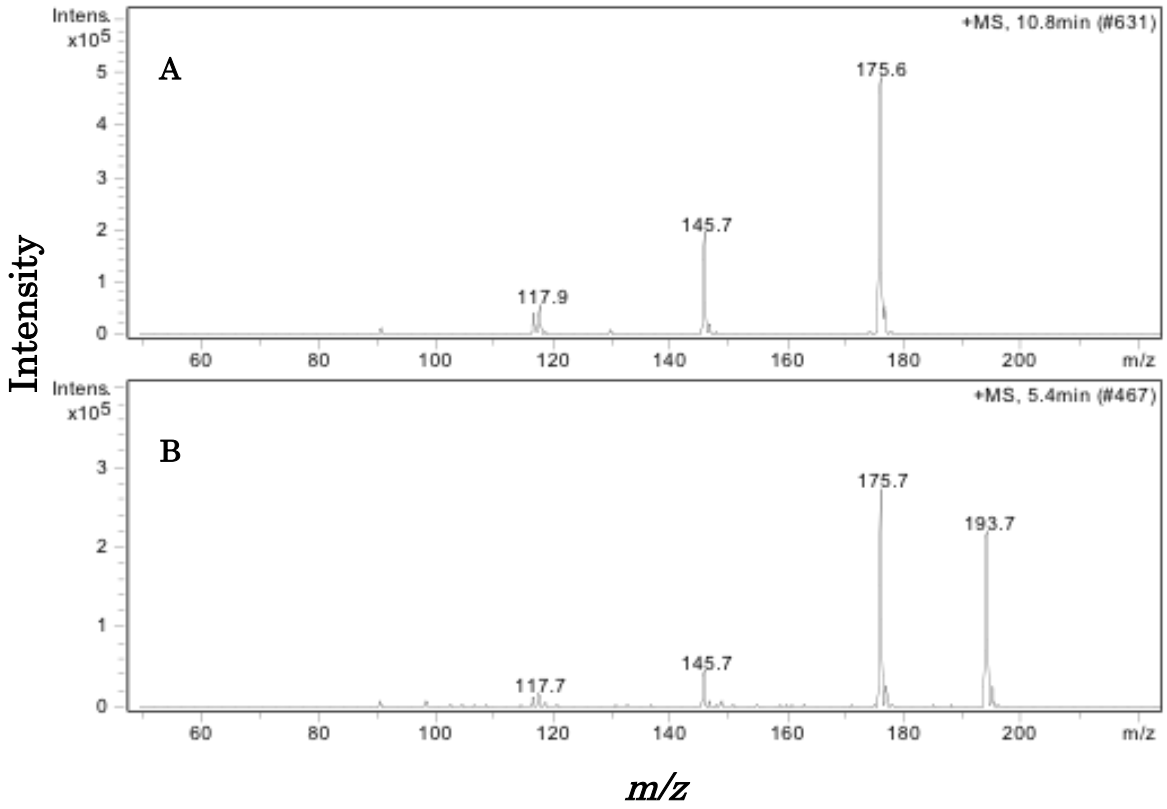


Fig. 2. Mass spectra of gentianine (**A**) and (±)-gentianol (**B**). [Wang *et al*., *J. Trad. Med.,* **25**, 29-34 (2008)]

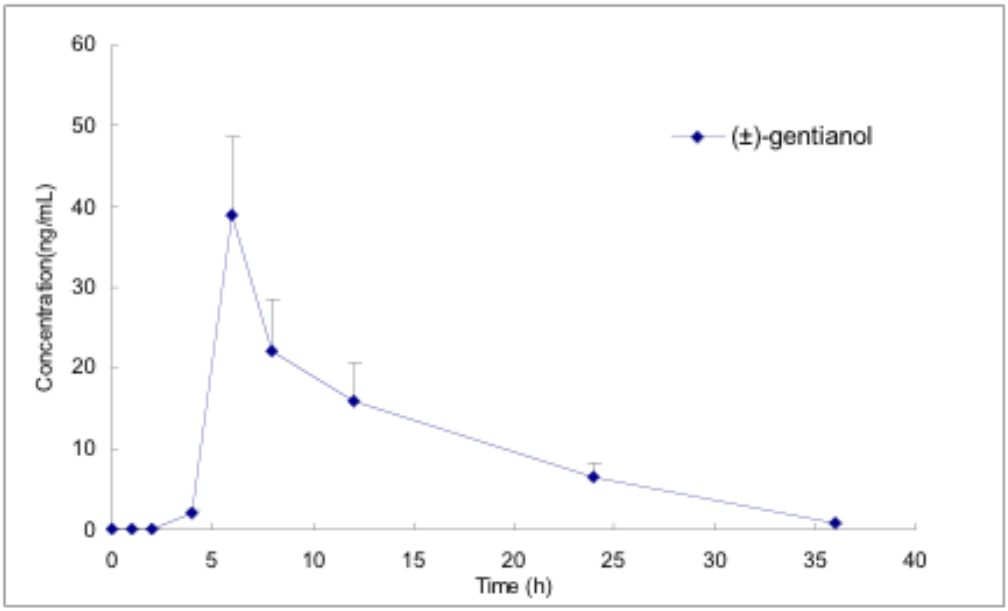


Fig. 3. Time course of (±)-gentianol (**4**) in rat plasma after oral administration of 200 mg/kg of swertiamarin (**1**) (n = 3).

Male Wistar rats (8 weeks old) purchased from SLC Co. (Hamamatsu, Japan) were fed with standard laboratory chow for one week, fasted overnight and given free access to water before drug administration. At intervals of 1, 2, 4, 6, 8, 12, 24 and 36 h after oral administration, the abdomen was exposed by a midline abdominal incision and blood samples were collected from the inferior vena cava using a heparinized injector. The blood samples were centrifuged at 8000 × g for 15 min to separate the plasma, and then all samples were stored at -20°C for later analysis. [Wang *et al*., *J. Trad. Med.,* **25**, 29-34 (2008)]

参考文献

1) Wang Z., Tang S., Ma C., Toyooka N., Kida H., Kawasaki M. and Hattori M.: Determination of novel nitrogen-containing metabolites after oral administration of swertiamarin to rats. *J. Trad. Med.,* **25**, 29-34 (2008).