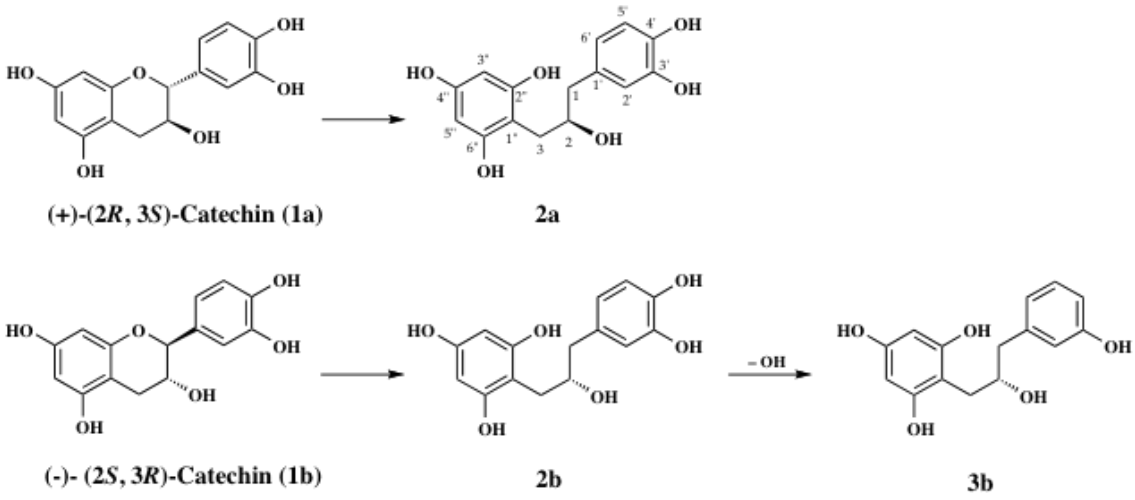
Catechin



代謝実験

腸内細菌代謝　ヒト腸内細菌単離株 *Eubacterium* sp. straun SDG-2

Incubation of (+)-catechin (1a) with *Eubacterium* sp. strain SDG-2

(+)-Catechin (**1a**) (30 mg in 2 ml MeOH) was added to a bacterial suspension (50 ml) of *E*. sp. strain SDG-2, and incubated at 37°C in an anaerobic incubator for 36 h. The reaction mixture was then extracted with water-saturated BuOH (3 × 50 ml). The organic layer was evaporated under reduced pressure to give a residue (95 mg). The residue was applied to a column of silica gel. The column was thoroughly washed with $CHCl_3$ and then eluted with $CHCl_3$–MeOH (10:1). Fractions were pooled to give fr. A and B. Repeated column chromatography on Sephadex LH-20 (*aq*. 95% MeOH) and RP-18 (MeOH–H_2O, 4:6) of fr. B to give **2a** (16 mg). [Wang *et al*., *Chem. Pharm. Bull*., **49**, 1640-1643 (2001)]

Incubation of (-)-catechin (1b) with *E*. sp. strain SDG-2

(-)-Catechin (**1b**) (10 mg in 1 ml MeOH) was anaerobically incubated with a bacterial suspension (20 ml) at 37°C for 36 h. After extraction and evaporation, the residue was applied to a column of silica gel, which was washed thoroughly with $CHCl_3$, followed by $CHCl_3$–MeOH (20:1 and 10:1) to give fr. A–C. After repeated column chromatography on Sephadex LH-20 (*aq*. 95% MeOH) and RP-18 (MeOH-H_2O, 4:6), fr.

B and C gave **3b** (2.0 mg) and **2b** (1.5 mg), respectively. [Wang *et al*., *Chem. Pharm. Bull*., **49**, 1640-1643 (2001)]

Compound 2a

Amorphous powder, $[\alpha]_D^{25}$ +19.8° (*c* 0.83, MeOH). EI-MS *m/z* : 292 $[M]^+$. ^{1}H-NMR (MeOH-d_4) δ: 2.47 (1H, dd, *J*=14.2, 8.3 Hz, H-1a), 2.60 (1H, dd, *J*=14.2, 7.6 Hz, H-3a), 2.63 (1H, dd, *J*=14.2, 4.3 Hz, H-1b), 2.82 (1H, dd, *J*=14.2, 4.3 Hz, H-3b), 3.91 (1H, ddd, *J*=8.3, 7.6, 4.3 Hz, H-2), 5.83 (2H, br s, H-3″, 5″), 6.48 (1H, dd, *J*=8.0, 1.9 Hz, H-6′), 6.61 (1H, d, *J*=8.0 Hz, H-5′), 6.62 (1H, d, *J*=1.9 Hz, H-2′). ^{13}C-NMR (MeOH- d_4) δ: 31.4 (C-3), 43.8 (C-1), 75.3 (C-2), 95.9 (C-3″, 5″), 105.7 (C-1″), 116.1 (C-5′), 117.6 (C-2′), 121.8 (C-6′), 132.5 (C-1′), 144.3 (C-4′), 145.8 (C-3′), 157.6 (C-2″, 6″), 158.1 (C-4″). [Wang *et al*., *Chem. Pharm. Bull*., **49**, 1640-1643 (2001)]

Compound 2b

Amorphous powder, $[\alpha]_D^{25}$ –16.8° (*c* 1.14, MeOH). EI-MS *m/z* : 292 $[M]^+$. ^{1}H-NMR (MeOH-d_4) δ: 2.50 (1H, dd, *J*=14.2, 8.3 Hz, H-1a), 2.65 (1H, dd, *J*=14.2, 7.8 Hz, H-3a), 2.66 (1H, dd, *J*=14.2, 4.2 Hz, H-1b), 2.85 (1H, dd, *J*=14.2, 4.3 Hz, H-3b), 3.94 (1H, ddd, *J*=8.3, 7.8, 4.2 Hz, H-2), 5.87 (2H, br s, H-3″, 5″), 6.52 (1H, dd, *J*=8.2, 2.2 Hz, H-6′), 6.65 (1H, d, *J*=8.2 Hz, H-5′), 6.65 (1H, d, *J*=2.2 Hz, H-2′). ^{13}C-NMR (MeOH-d_4) δ: 31.5 (C-3), 43.8 (C-1), 75.4 (C-2), 96.0 (C-3″, 5″), 105.7 (C-1″), 116.1 (C-5′), 117.6 (C-2′), 121.8 (C-6′), 132.6 (C-1′), 144.4 (C-4′), 145.9 (C-3′), 157.7 (C-2″, 6″), 158.2 (C-4″). [Wang *et al*., *Chem. Pharm. Bull*., **49**, 1640-1643 (2001)]

Compound 3b

Amorphous powder, $[\alpha]_D^{25}$ -13.5° (*c* 0.78, MeOH). EI-MS *m/z* : 276 $[M]^+$. ^{1}H-NMR (MeOH-d_4) δ: 2.54 (1H, dd, *J*=14.2, 8.7 Hz, H-1a), 2.65 (1H, dd, *J*=14.2, 7.3 Hz, H-3a), 2.70 (1H, dd, *J*=14.2, 3.9 Hz, H-1b), 2.83 (1H, dd, *J*=14.2, 4.6 Hz, H-3b), 3.98 (1H, dddd, *J*=8.7, 7.3, 4.6, 3.9 Hz, H-2), 5.83 (2H, br s, H-3″, 5″), 6.54 (1H, ddd, *J*=8.0, 2.4, 1.0 Hz, H-6′), 6.62 (1H, dd, *J*=2.4, 1.0 Hz, H-2′), 6.63 (1H, dd, *J*=8.3, 1.0 Hz, H-4′), 7.00 (1H, t, *J*=8.0 Hz, H-5′). ^{13}C-NMR (MeOH-d_4) δ: 31.7 (C-3), 44.4 (C-1), 75.1 (C-2),

95.9 (C-3″, 5″), 105.6 (C-1″), 113.8 (C-2′), 117.4 (C-4′), 121.8 (C-6′), 130.0 (C-5′), 142.5 (C-1′), 158.2 (C-3′), 158.3 (C-4″), 157.8 (C-2″, 6″). [Wang *et al*., *Chem. Pharm. Bull*., **49**, 1640-1643 (2001)]

参考文献

1) Wang L., Meselhy M. R., Li Y., Nakamura N., Min B., Qin G. and Hattori M.: The heterocyclic ring fission and dehydroxylation of catechins and related compounds by *Eubacterium* sp. strain SDG-2, a human intestinal bacterium. *Chem. Pharm. Bull*., **49**, 1640-1643 (2001).