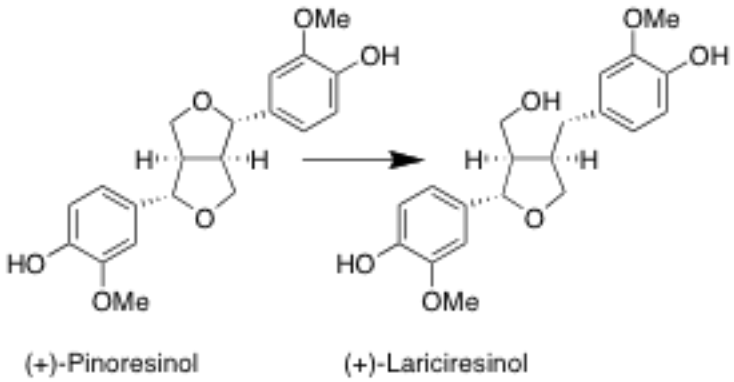
Pinoresinol diglucoside



Transformation of pinoresinol to lariciresinol by *Enterococcus faecalis* strain PDG

代謝実験

腸内細菌代謝　*Enterococcus faecalis* strain PDG

代謝物の性状

(+)-Lariciresinol

Amorphous powder. $[\alpha]_D^{25}$ +30 ^{o} (*c*=0.10, MeOH). UV λ_{max}^{MeOH} (ε): 229(13000), 281(5600) nm. IR (KBr) ν_{max}: 3448 (OH), 1516 (arom. C=C) cm^{-1}. EI-MS *m/z*: 360 $[M]^{+}$. ^{1}H-NMR (CD_3OD, 400 MHz): δ 2.37 (1H, m, H-8), 2.48 (1H, dd, *J* =13.4, 11.1 Hz, H_a-7'), 2.73 (1H, m, H-8'), 2.92 (1H, dd, *J* =13.4, 4.8 Hz, H_b-7'), 3.62 (1H, dd, *J*=10.9, 6.5 Hz, H_a-9), 3.72 (1H, dd, *J*=8.4, 5.8 Hz, H_a-9'), 3.82 (3H, s, -OC$\underline{H}_3$), 3.83 (1H, dd, *J*=10.9, 8.0 Hz, H_b-9), 3.84 (3H, s, -OC$\underline{H}_3$), 3.97 (1H, dd, *J*=8.4, 6.5 Hz, H_b-9'), 4.74 (1H, d, *J*=7.0 Hz, H-7), 6.64 (1H, dd, *J*=8.0, 1.9 Hz, H-6'), 6.71 (1H, d,

J=8.0 Hz, H-5'), 6.75 (1H, m, H-6), 6.76 (1H, m, H-5), 6.79 (1H, d, *J*=1.9 Hz, H-2'), 6.90 (1H, d, *J*=1.8 Hz, H-2). ^{13}C-NMR: see reference 1). CD (MeOH): $\Delta\varepsilon_{288}$ -0.26 , $\Delta\varepsilon_{235}$ -1.07 ($dm^3\ mol^{-1}cm^{-1}$).

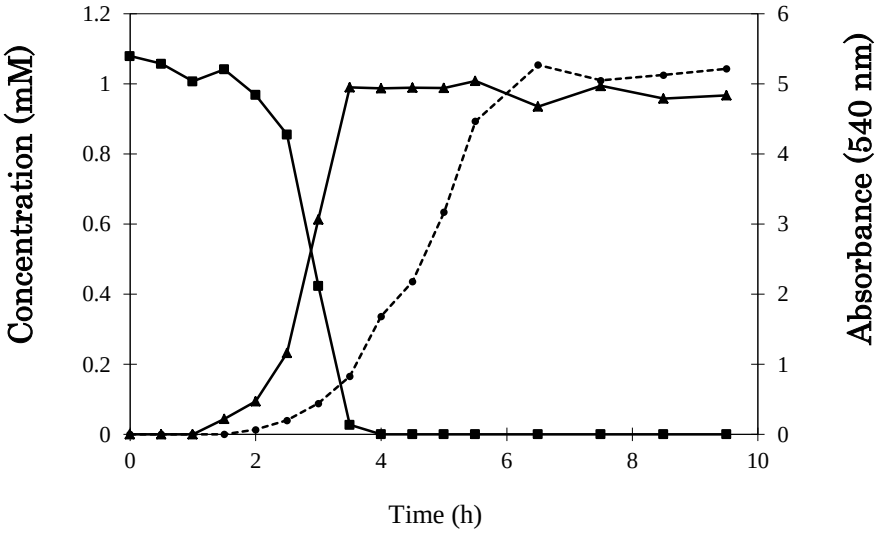


Fig. 1. Time course of the transformation of (+)-pinoresinol (**2**, ■) to (+)-lariciresinol (**3**, ▲) by *Enterococcus faecalis* strain PDG-1

Bacterial growth (……) was monitored by measuring turbidity at 540 nm.
Sixty μl of arctiin (100 mM in MeOH) and 600 μl of an bacterial culture were added to 6 ml of GAM broth, and the mixture was incubated at 37 ^{o}C under anaerobic conditions. A 100 μl portion was taken out at intervals and extracted by BuOH (saturated with H_2O,

containing 0.1% acetic acid, 100 μl × 3). After evaporation of BuOH *in vacuo*, the residue was dissolved in 0.5 ml of MeOH. The MeOH solution was diluted with H_2O to a volume of 1 ml and filtered through a 0.2 μm membrane filter, then a 5 μl portion was injected to a column for HPLC analysis.

参考文献

1) Xie L., Akao T., Hamasaki K., Deyama T. and Hattori M.: Biotransformation of pinoresinol diglucoside to mammalian lignans by human intestinal microflora, and isolation of *Enterococcus faecalis* strain PDG-1responsible for the transformation of (+)-pinoresinol to (+)-lariciresinol. *Chem. Pharm. Bull.*, **51**, 508-515 (2003).