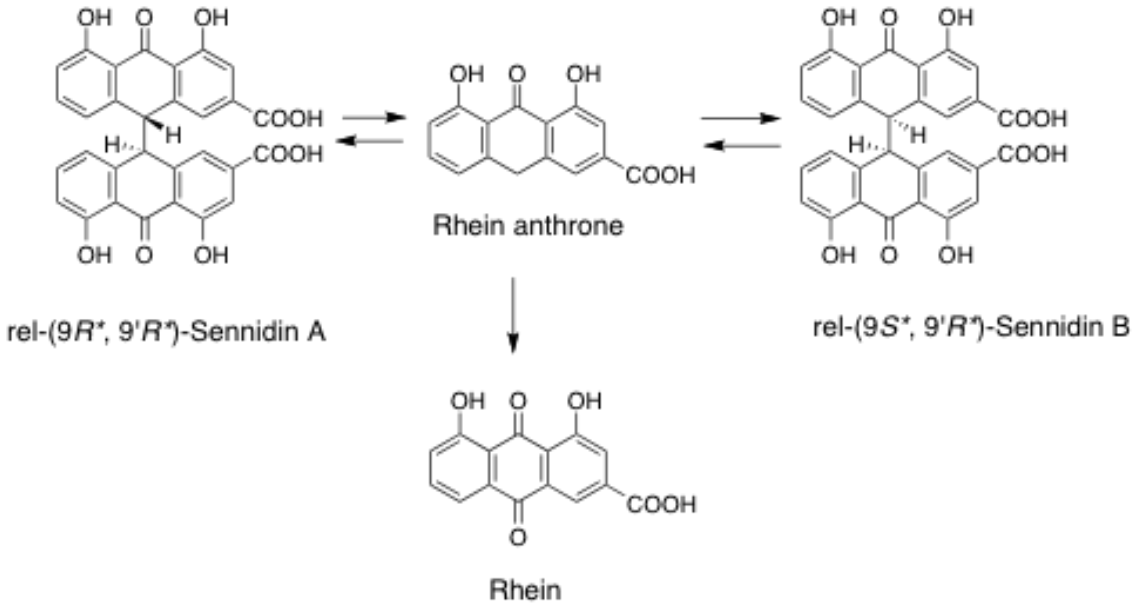
Sennidin A



代謝実験
腸内細菌代謝　ラット腸内細菌フローラ
単一化合物　sennidin A

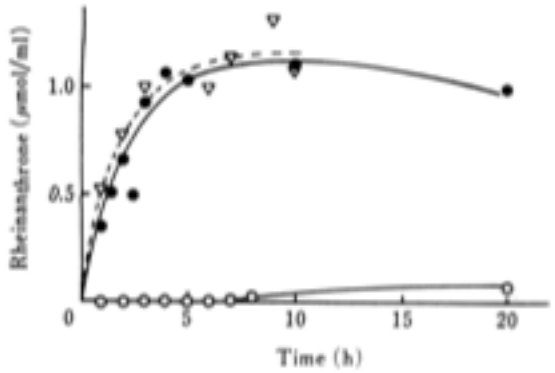


Fig. 1.　Conversion of sennidin A to rhein anthrone by a suspension of rat feces, a supernatant fluid and a dialyzed suspension.

Rhein anthrone produced was treated with *p*-nitroso-*N,N'*-dimethylaniline, and analyzed quantitatively by TLC-densitometry, using a Shimadzu CS-910 TLC scanner (λs = 650

nm, λr = 785nm). ●, the suspension of rat feces; ○, the supernatant fluid; ▽, the dialyzed suspension. [Hattori *et al*., *Chem. Pharm. Bull*., **30**, 1338-1346 (1982)]

Preparation of a suspension of rat feces and its supernatant fluid

Fresh feces (20 g) of Wistar rats (female, 180—220 g body weight) were suspended in 100 mM phosphate buffer (200 ml, pH 7.3) containing 0.05% cysteine, which had previously been bubbled through with carbon dioxide to eliminate air. The supernatant fluid was prepared by centrifuging the suspension at 10000 rpm for 10 min. [Hattori *et al*., *Chem. Pharm. Bull*., **30**, 1338-1346 (1982)]

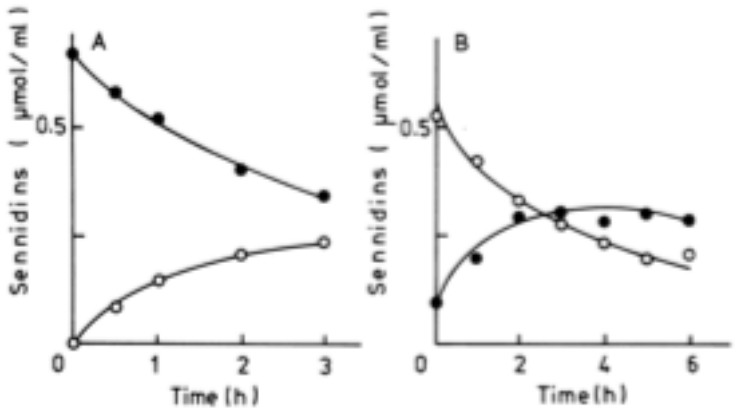


Fig. 2. Isomerization of sennidin A to sennidin B (left) and *vice versa* (right) by anaerobical incubation with a rat fecal mixture.

● , sennidin A; ○, sennidin B. [Hattori *et al*., *Chem. Pharm. Bull*., **30**, 1338-1346 (1982)]

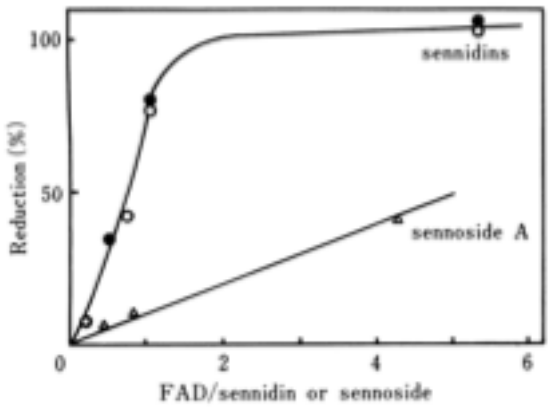


Fig. 3. Non-enzymatic reduction of sennidins and sennoside A by $FADH_2$

Molar ratio of FAD with respect to sennidin or sennoside is represented on the abscissa and reduction (%) of sennidins or sennoside A on the ordinate. [Akao et al., *Chem. Pharm. Bull*., **35**, 1998-2003 (1987)]

Non-enzymatic reduction of sennidins, sennosides and methyl orange

Non-enzymatic reduction of these compounds was carried out in a Thunberg-type tube under nitrogen. In the main part of the tube, 0.2—20 μmol of a cofactor such as FAD, FMN, riboflavin or benzyl viologen was first reduced with 4—100 μmol of NADH in the presence of the purified sennidin reductase in 2 ml of 0.1 m K-phosphate buffer at 37 °C. Then 0.19 μmol of sennidin A or B, 0.23 μmol of sennoside A or B, or 0.20 μmol of methyl orange containing 2 μmol of *p*-chloromercuriphenylsulfonic acid (*p*CMS) (to inactivate the enzyme) in the side arm was mixed with the reduced cofactor in the main tube at room temperature. Rhein anthrone and 8-glucosylrhein anthrone, the reduction products of sennidins and sennosides, respectively, were determined as the azometin derivatives by adding *p*-nitoroso-*N,N'*-dimethylaniline. Reduced methyl orange was determined by measuring the absorbance at 500 nm. [Akao et al., *Chem. Pharm. Bull*., **35**, 1998-2003 (1987)]

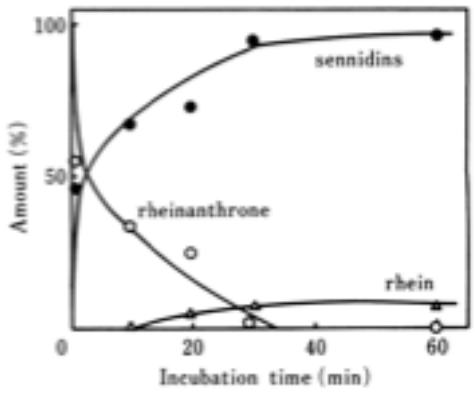


Fig. 4. Aerobic oxidation of rhein anthrone to sennidins A and B

The ordinate represents production (%) of sennidins and rhein and decrease (%) of rhein anthrone on a molar basis. [Akao et al., *Chem. Pharm. Bull*., **35**, 1998-2003 (1987)]

参考文献

1) Hattori M., Kim G., Motoike S., Kobashi K. and Namba T.: Metabolism of sennosides by intestinal flora. *Chem. Pharm. Bull*., **30**, 1338-1346 (1982).

2) Akao T., Mibu K., Erabi T., Hattori M., Namba T. and Kobashi K.: Non-enzymatic reduction of sennidins and sennosides by reduced flavin. *Chem. Pharm. Bull*., **35**, 1998-2003 (1987).