

Ono, M. et al., Chem. Pharm. Bull., 1996, 44, 337-342, (分離, H-NMR, C13-NMR)  
Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (分離, H-NMR, C13-NMR)

§ 1,8-Epoxy-*p*-menthane-2,5-diol; (1*S*,2*R*,4*S*,5*R*)-form, 2-*O*-β-D-Glucopyranoside

[化学名・別名] Foeniculoside IX

[CAS No.] 174232-48-5

[化合物分類] テルペノイド (p-Menthane monoterpenoids)

[構造式]

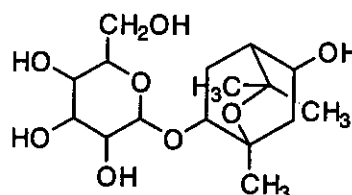
[分子式] C<sub>16</sub>H<sub>28</sub>O<sub>8</sub>

[分子量] 348.392

[基原] *Foeniculum vulgare*

[性状] 粉末

[比旋光度]: [α]<sub>D</sub><sup>20</sup> -65.9 (c, 2.5 in MeOH)



-----文献-----

Ono, M. et al., Chem. Pharm. Bull., 1996, 44, 337-342, (分離, H-NMR, C13-NMR)  
Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (分離, H-NMR, C13-NMR)

§ 1,8-Epoxy-*p*-menthane-2,5-diol; (1*S*,2*S*,4*S*,5*R*)-form

[CAS No.] 219546-83-5

[化合物分類] テルペノイド (p-Menthane monoterpenoids)

[構造式]

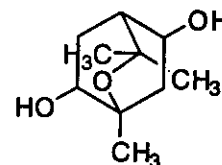
[分子式] C<sub>10</sub>H<sub>18</sub>O<sub>3</sub>

[分子量] 186.25

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>23</sup> -13 (c, 0.3 in MeOH)



-----文献-----

Ono, M. et al., Chem. Pharm. Bull., 1996, 44, 337-342, (分離, H-NMR, C13-NMR)  
Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (分離, H-NMR, C13-NMR)

§ 1,8-Epoxy-*p*-menthane-2,5-diol; (1*S*,2*S*,4*S*,5*R*)-form, 2-*O*-β-D-Glucopyranoside

[CAS No.] 219583-17-2

[化合物分類] テルペノイド (p-Menthane monoterpenoids)

[構造式]

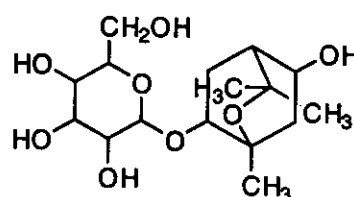
[分子式] C<sub>16</sub>H<sub>28</sub>O<sub>8</sub>

[分子量] 348.392

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>23</sup> -24.7 (c, 0.3 in MeOH)



-----文献-----

Ono, M. et al., Chem. Pharm. Bull., 1996, 44, 337-342, (分離, H-NMR, C13-NMR)  
Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (分離, H-NMR, C13-NMR)

§ 1,8-Epoxy-*p*-menthane-2,6-diol; (1*R**S*,2*R**S*,4*S**R*,6*S**R*)-form

[化学名・別名] *exo,exo*-form

[CAS No.] 38223-98-2

[化合物分類] テルペノイド (p-Menthane monoterpenoids)

[構造式]

[分子式] C<sub>10</sub>H<sub>18</sub>O<sub>3</sub>

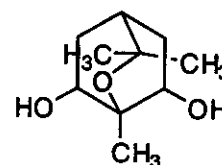
[分子量] 186.25

[基原] *Foeniculum vulgare*

[性状] 針状結晶 (MeOH) もしくは粉末

[融点] Mp 164-165 °C

[その他のデータ] Parent compound is *meso*-. Monoglycosylation at O<sup>2</sup> or O<sup>6</sup> produces diastereoisomeric compounds



-----文献-----

Ono, M. et al., Chem. Pharm. Bull., 1996, 44, 337-342, (分離, H-NMR, C13-NMR)  
Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (分離, H-NMR, C13-NMR)

§ 1,8-Epoxy-*p*-menthane-2,6-diol; (1*R*,2*R*,4*S*,6*S*)-form, 2-*O*-β-D-Glucopyranoside

[化学名・別名] Foeniculoside VIII

[CAS No.] 174285-76-8

[化合物分類] テルペノイド (p-Menthane monoterpeneoids)

[構造式]

[分子式] C<sub>16</sub>H<sub>26</sub>O<sub>8</sub>

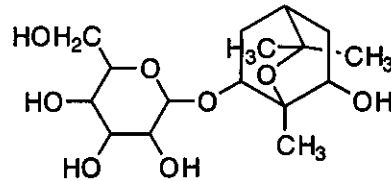
[分子量] 348.392

[基原] *Foeniculum vulgare*

[性状] 粉末

[比旋光度]: [α]<sub>D</sub><sup>29</sup> -34.9 (c, 1.6 in MeOH)

[その他のデータ] 絶対構造は (1*S*,2*R*,4*R*,6*S*)-



-----文献-----

Ono, M. et al., Chem. Pharm. Bull., 1996, 44, 337-342, (分離, H-NMR, C13-NMR)  
Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (分離, H-NMR, C13-NMR)

§ 1,8-Epoxy-*p*-menthane-2,6-diol; (1*R*,2*R*,4*S*,6*S*)-form, 6-*O*-β-D-Glucopyranoside

[CAS No.] 219583-13-8

[化合物分類] テルペノイド (p-Menthane monoterpeneoids)

[構造式]

[分子式] C<sub>16</sub>H<sub>26</sub>O<sub>8</sub>

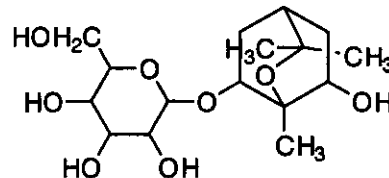
[分子量] 348.392

[基原] *Foeniculum vulgare*

[性状] 無定形の粉末

[比旋光度]: [α]<sub>D</sub><sup>23</sup> -23.5 (c, 0.1 in MeOH)

[その他のデータ] 絶対構造は (1*R*,2*R*,4*S*,6*S*)-. Can also be descr. as the 2-glucoside with abs. config. (1*R*,2*S*,4*S*,6*R*)



-----文献-----

Ono, M. et al., Chem. Pharm. Bull., 1996, 44, 337-342, (分離, H-NMR, C13-NMR)  
Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (分離, H-NMR, C13-NMR)

§ 1,8-Epoxy-*p*-menthane-2,7-diol; (1*S*,2*S*,4*S*)-form, 2-*O*-β-D-Glucopyranoside

[CAS No.] 219546-80-2

[化合物分類] テルペノイド (p-Menthane monoterpeneoids)

[構造式]

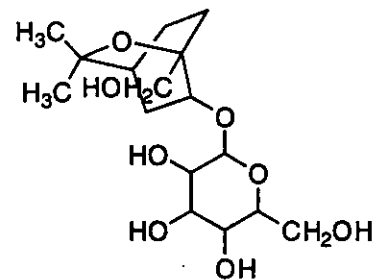
[分子式] C<sub>16</sub>H<sub>26</sub>O<sub>8</sub>

[分子量] 348.392

[基原] *Foeniculum vulgare*

[性状] 無定形の粉末

[比旋光度]: [α]<sub>D</sub><sup>23</sup> -18 (c, 0.1 in MeOH)



-----文献-----

Carman, R.M. et al., Aust. J. Chem., 1996, 49, 741-749, (分離, 合成法)  
Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (2-glucoside)

§ 1,8-Epoxy-*p*-menthan-2-ol; (1*R*,2*R*,4*S*)-form, *O*-β-D-Glucopyranoside

[CAS No.] 155836-26-3

[化合物分類] テルペノイド (p-Menthane monoterpeneoids)

[構造式]

[分子式] C<sub>16</sub>H<sub>26</sub>O<sub>7</sub>

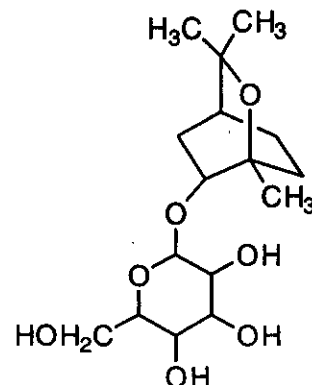
[分子量] 332.393

[基原] *Foeniculum vulgare*

[性状] 針状結晶 (MeOH)

[融点] Mp 85-86 °C

[比旋光度]: [α]<sub>D</sub><sup>23</sup> -66.3 (c, 1 in MeOH)



-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (*Foeniculum vulgare* glucosides)  
 Wang, M., J. Agric. Food Chem., 1998, 46, 2509-2511, (1S,2R,4R-glucopyranoside, 分離, NMR)

§ 1,8-Epoxy-*p*-menthan-2-ol; (1R,2S,4S)-form, *O*-β-D-Glucopyranoside

[CAS No.] 219583-06-9

[化合物分類] テルペノイド (*p*-Menthane monoterpenoids)

[構造式]

[分子式] C<sub>16</sub>H<sub>26</sub>O<sub>7</sub>

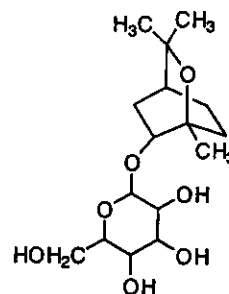
[分子量] 332.393

[基原] *Foeniculum vulgare*

[性状] 針状結晶 (MeOH)

[融点] Mp 94-95 °C

[比旋光度]: [α]<sub>D</sub><sup>21</sup> -7.2 (c, 1 in MeOH)



-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (*Foeniculum vulgare* glucosides)  
 Wang, M., J. Agric. Food Chem., 1998, 46, 2509-2511, (1S,2R,4R-glucopyranoside, 分離, NMR)

§ 1,8-Epoxy-*p*-menthan-2-ol; (1S,2R,4R)-form, *O*-β-D-Glucopyranoside

[CAS No.] 168038-89-9

[化合物分類] テルペノイド (*p*-Menthane monoterpenoids)

[構造式]

[分子式] C<sub>16</sub>H<sub>26</sub>O<sub>7</sub>

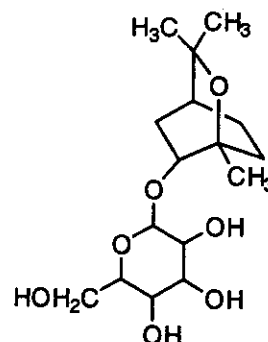
[分子量] 332.393

[基原] *Foeniculum vulgare*, *Cunila spicata*, Dalmation sage (*Salvia officinalis*) の葉

[性状] 無定型の塊

[融点] Mp 92-94 °C

[比旋光度]: [α]<sub>D</sub><sup>21</sup> -46.3 (c, 1.5 in MeOH)



-----文献-----

Manns, D., Phytochemistry, 1995, 39, 1115-1118, (*Cunila spicata* glucoside)  
 Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (*Foeniculum vulgare* glucosides)  
 Wang, M., J. Agric. Food Chem., 1998, 46, 2509-2511, (1S,2R,4R-glucopyranoside, 分離, NMR)

§ 1,8-Epoxy-*p*-menthan-2-ol; (1S,2S,4R)-form, *O*-β-D-Glucopyranoside

[CAS No.] 113270-15-8

[化合物分類] テルペノイド (*p*-Menthane monoterpenoids)

[構造式]

[分子式] C<sub>16</sub>H<sub>26</sub>O<sub>7</sub>

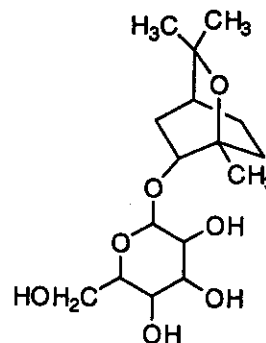
[分子量] 332.393

[基原] *Foeniculum vulgare*, *Citrus unshiu*

[性状] 針状結晶 (MeOH)

[融点] Mp 83-84 °C

[比旋光度]: [α]<sub>D</sub><sup>23</sup> +5.5 (c, 1.6 in MeOH)



-----文献-----

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1583-1586, (apiosylglucoside)  
 Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (*Foeniculum vulgare* glucosides)  
 Wang, M., J. Agric. Food Chem., 1998, 46, 2509-2511, (1S,2R,4R-glucopyranoside, 分離, NMR)

§ 1,8-Epoxy-*p*-menthan-4-ol; *O*-β-D-Glucopyranoside

[CAS No.] 219546-79-9

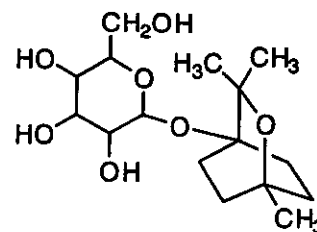
[化合物分類] テルペノイド (*p*-Menthane monoterpenoids)

[構造式]

[分子式] C<sub>16</sub>H<sub>26</sub>O<sub>7</sub>

[分子量] 332.393

[基原] *Foeniculum vulgare*



[性状] 無定型の粉末  
[比旋光度]:  $[\alpha]_D^{25} -18$  (c, 1.3 in MeOH)

-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1738-1742, (分離, H-NMR, C13-NMR)

§ 2,5-Fenchanediol; (1R,2S,4R,5S)-form, 2-O-β-D-Glucopyranoside

[CAS No.] 217960-83-3

[化合物分類] テルペノイド (Fenchane monoterpeneoids)

[構造式]

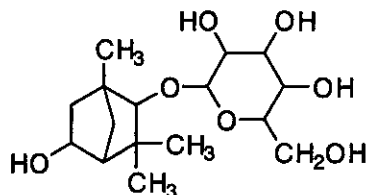
[分子式]  $C_{16}H_{26}O_7$

[分子量] 332.393

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{25} -3.5$  (c, 0.4 in MeOH)



-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1599-1602, (分離, H-NMR, C13-NMR)

§ 2,6-Fenchanediol; (1R,2R,4S,6R)-form, 2-O-β-D-Glucopyranoside

[CAS No.] 217960-81-1

[化合物分類] テルペノイド (Fenchane monoterpeneoids)

[構造式]

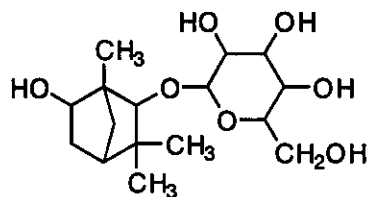
[分子式]  $C_{16}H_{26}O_7$

[分子量] 332.393

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{25} -34.8$  (c, 0.6 in MeOH)



-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1599-1602, (分離, H-NMR, C13-NMR)

§ 2,5,7-Fenchanetriol; (1S,2S,4R,5S,7S)-form, 2-O-β-D-Glucopyranoside

[CAS No.] 217960-85-5

[化合物分類] テルペノイド (Fenchane monoterpeneoids)

[構造式]

[分子式]  $C_{16}H_{26}O_8$

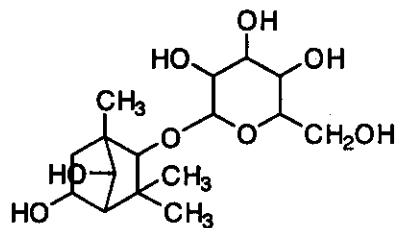
[分子量] 348.392

[基原] *Foeniculum vulgare*

[性状] 針状結晶 (MeOH)

[融点] Mp 211-213 °C

[比旋光度]:  $[\alpha]_D^{25} -6.5$  (c, 0.3 in MeOH)



-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1599-1602, (分離, H-NMR, C13-NMR)

§ Fenchone; (+)-form

[CAS No.] 7787-20-4

[化合物分類] テルペノイド (Fenchane monoterpeneoids)

[構造式]

[分子式]  $C_{10}H_{16}O$

[分子量] 152.236

[基原] 植物界に広く存在する, 例えば, ウイキョウ (*Foeniculum vulgare*), *Blumea lacera*, *Prunella vulgaris*

[用途] 脱水素機構における水素の受容体として用いることができる. 香料原料

[性状] 樟脳臭を持つオイル

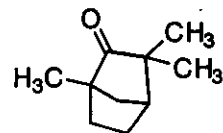
[融点] Mp 3-5 °C. 凝固点: Fp 5-6 °C

[沸点] Bp 193.5 °C

[比旋光度]:  $[\alpha]_D^{25} +63$ .  $[\alpha]_D^{25} +48$  (c, 0.2 in  $CCl_4$ )

[溶解性] 水に難溶, エタノールに易溶; BERDY SOL: メタノール, ヘキサンに可溶; 水に難溶

[販売元] Aldrich:W50770-9; Fluka:46200; Rare Chemicals Library:S57022-2



-----文献-----

Opdyke, D.L.J., Food Cosmet. Toxicol., 1976, 14, 769, (レビユー, 毒性)

Fenaroli's Handbook of Flavor Ingredients, 3rd edn., (ed. Burdock, G.A.), CRC Press, 1995, 2, 278, (レビユー)

Lewis, R.J., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, TLW250

§ 4-Hydroxybenzyl alcohol; 4-Me ether, *O*-β-D-glucopyranoside

[化学名・別名] 4-Methoxybenzyl glucoside. *p*-Anisyl glucoside

[CAS No.] 81381-72-8

[化合物分類] 単環芳香族 (Simple benzyl alcohols)

[構造式]

[分子式] C<sub>14</sub>H<sub>20</sub>O<sub>7</sub>

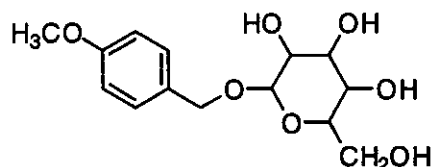
[分子量] 300.308

[基原] *Curcubita pepo*, *Foeniculum vulgare*

[性状] 針状結晶 (EtOAc)

[融点] Mp 137-138 °C

[比旋光度]: [α]<sub>D</sub><sup>21</sup> -51.1 (c, 1.2 in MeOH)



-----文献-----

Itokawa, H. et al., Phytochemistry, 1982, 21, 1935, (4-Methoxybenzyl glucoside)

Bilia, A.R. et al., Planta Med., 1994, 60, 569, (4-apiosylglucoside)

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1587-1590, (4-methoxybenzyl glucosides)

Lewis, R.J., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, MED500

§ 4-Hydroxybenzyl alcohol; 4-Me ether, α-*O*-(2-*O*-sulfo-β-D-glucopyranoside)

[化合物分類] 単環芳香族 (Simple benzyl alcohols)

[構造式]

[分子式] C<sub>14</sub>H<sub>20</sub>O<sub>10</sub>S

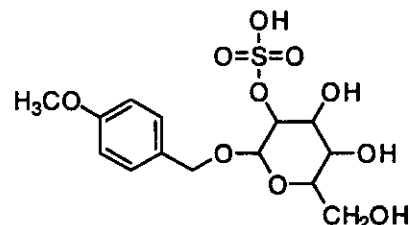
[分子量] 380.372

[基原] *Foeniculum vulgare*

[性状] 針状結晶 (MeOH) (as Na salt)

[融点] Mp 149-151 °C (Na salt)

[比旋光度]: [α]<sub>D</sub><sup>21</sup> -34.6 (c, 0.8 in MeOH) (Na salt)



-----文献-----

Mumford, F.E. et al., Phytochemistry, 1963, 2, 215, (分離)

Opdyke, D.L.J., Food Cosmet. Toxicol., 1974, 12, 825, (レビユー, 毒性, Anisyl alcohol)

Itokawa, H. et al., Phytochemistry, 1982, 21, 1935, (4-Methoxybenzyl glucoside)

4-Methoxybenzyl acetate, Anisyl acetate)

De Tommasi, N. et al., Phytochemistry, 1996, 42, 163, (4-Methoxybenzyl rutinoside)

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1587-1590, (4-methoxybenzyl glucosides)

Lewis, R.J., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, MED500

§ 6-Hydroxy-2-bornanone; (1*R*,4*R*,6*S*)-form, *O*-β-D-Glucopyranoside

[CAS No.] 155551-16-9

[化合物分類] テルペノイド (Camphane monoterpenoids)

[構造式]

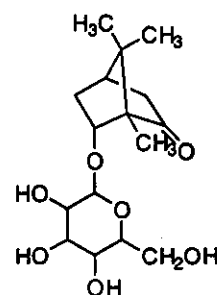
[分子式] C<sub>16</sub>H<sub>26</sub>O<sub>7</sub>

[分子量] 330.377

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>23</sup> -8 (c, 0.2 in MeOH)

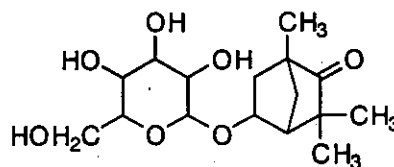


-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1999, 47, 805-808, (分離, H-NMR, C13-NMR)

§ 5-Hydroxyfenchone; (1*R*,4*R*,5*S*)-form, *O*-β-D-Glucopyranoside

[CAS No.] 155960-75-1  
 [化合物分類] テルペノイド (Fenchane monoterpeneoids)  
 [構造式]  
 [分子式]  $C_{16}H_{26}O_7$   
 [分子量] 330.377  
 [基原] *Foeniculum vulgare*  
 [性状] 無定型の粉末  
 [比旋光度]:  $[\alpha]_D^{26} -6.2$  (c, 0.8 in MeOH)

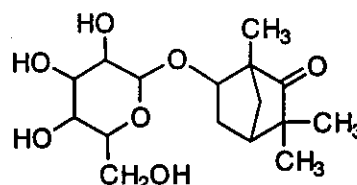


----- 文献 -----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1599-1602, (分離, H-NMR, C13-NMR)

§ 6-Hydroxyfenchone; (1*R*,4*S*,6*R*)-form, *O*-β-D-Glucopyranoside

[CAS No.] 155960-76-2  
 [化合物分類] テルペノイド (Fenchane monoterpeneoids)  
 [構造式]  
 [分子式]  $C_{16}H_{26}O_7$   
 [分子量] 330.377  
 [基原] *Foeniculum vulgare*  
 [性状] 無定型の粉末  
 [比旋光度]:  $[\alpha]_D^{21} -44$  (c, 1.1 in MeOH)

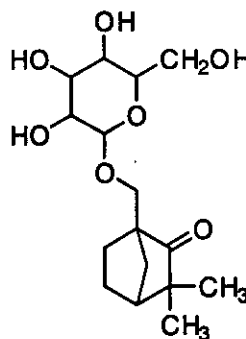


----- 文献 -----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1599-1602, (分離, H-NMR, C13-NMR)

§ 10-Hydroxyfenchone; (1*S*,4*R*)-form, *O*-β-D-Glucopyranoside

[CAS No.] 217960-75-3  
 [化合物分類] テルペノイド (Fenchane monoterpeneoids)  
 [構造式]  
 [分子式]  $C_{16}H_{26}O_7$   
 [分子量] 330.377  
 [基原] *Foeniculum vulgare*  
 [性状] 針状結晶 (MeOH)  
 [融点] Mp 91-92 °C  
 [比旋光度]:  $[\alpha]_D^{21} -1.8$  (c, 1.1 in MeOH)

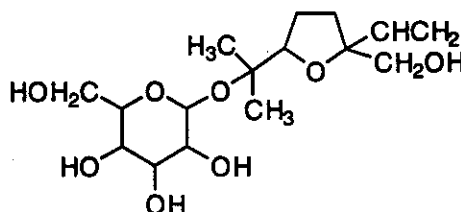


----- 文献 -----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1599-1602, (分離, H-NMR, C13-NMR)

§ 10-Hydroxylinalyl oxide; (3*R*\*,6*R*\*)-form, 7-*O*-β-D-Glucopyranoside

[CAS No.] 219814-36-5  
 [化合物分類] テルペノイド (Acyclic monoterpeneoids)  
 [構造式]  
 [分子式]  $C_{16}H_{26}O_8$   
 [分子量] 348.392  
 [基原] *Foeniculum vulgare*  
 [性状] 無定型の粉末  
 [比旋光度]:  $[\alpha]_D^{21} -13.8$  (c, 0.9 in MeOH)

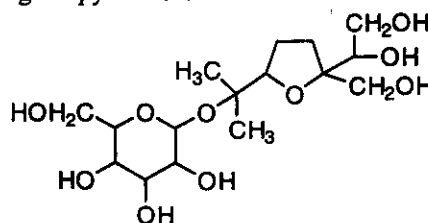


----- 文献 -----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1748-1751, (分離, H-NMR, C13-NMR)

§ 10-Hydroxylinalyl oxide; (3*R*\*,6*R*\*)-form, 1,2-Dihydro, 1,2-dihydroxy, 7-*O*-β-D-glucopyranoside

[化学名・別名] 1,2,10-Trihydroxydihydro-*trans*-linalyl oxide 7-*O*-β-D-glucopyranoside  
 [CAS No.] 219814-37-6  
 [化合物分類] テルペノイド (Acyclic monoterpeneoids)  
 [構造式]  
 [分子式]  $C_{16}H_{30}O_{10}$   
 [分子量] 382.407  
 [基原] *Foeniculum vulgare*  
 [性状] 無定型の粉末



[比旋光度]: $[\alpha]_D^{23} +0.5$  (c, 0.2 in MeOH)

-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1748-1751, (分離, H-NMR, C13-NMR)

§ 10-Hydroxylinalyl oxide; (3*R*\*,6*S*\*)-form, 7-*O*-β-D-Glucopyranoside

[CAS No.]219814-34-3

[化合物分類]テルペノイド(Acyclic monoterpenoids)

[構造式]

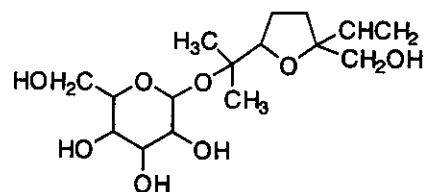
[分子式] $C_{16}H_{26}O_8$

[分子量]348.392

[基原]*Foeniculum vulgare*

[性状]無定型の粉末

[比旋光度]: $[\alpha]_D^{25} -3.5$  (c, 0.2 in MeOH)



-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1748-1751, (分離, H-NMR, C13-NMR)

§ 5-(Hydroxymethyl)-1,2,3-benzenetriol; 1,3-Di-Me ether, 2-*O*-β-D-glucopyranoside

[化学名・別名]Di-*O*-methylcrenatin

[CAS No.]64121-98-8

[化合物分類]単環芳香族(Simple benzyl alcohols)

[構造式]

[分子式] $C_{15}H_{22}O_9$

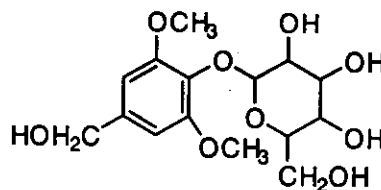
[分子量]346.333

[基原]*Fagraea blumei*, ウイキョウ(*Foeniculum vulgare*)

[性状]針状結晶(EtOH or MeOH)

[融点]Mp 175-177 °C (164-165 °C)

[比旋光度]: $[\alpha]_D^{20} -22.2$  (c, 1.6 in MeOH)



-----文献-----

Claus, P. et al., Monatsh. Chem., 1972, 103, 1178, (di-Me ether)

Leudemann, H.D. et al., Makromol. Chem., 1974, 175, 2393, (di-Me ether)

Ozawa, T. et al., Agric. Biol. Chem., 1977, 41, 1249; 1257; 1979, 43, 1173; 1980, 44, 581, (Crenatin, Cretanin, Acetylcretanin)

Cuendet, M. et al., Helv. Chim. Acta, 1997, 80, 1144-1152, (Dimethylcrenatin)

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1587-1590, (1,3-di-Me 2-glucoside)

§ 2-(Hydroxymethyl)-1,2,3,4-butanetetrol; (*R*)-form

[化学名・別名]L-form

[CAS No.]217975-02-5

[化合物分類]テルペノイド(p-Menthane monoterpenoids), 炭水化物(Tetritols)

[構造式]

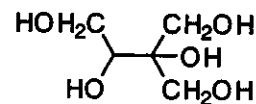
[分子式] $C_7H_{12}O_5$

[分子量]152.147

[基原]*Foeniculum vulgare* と *Torilis japonica* の果実

[性状]シロップ

[比旋光度]: $[\alpha]_D^{25} +4.4$  (c, 0.5 in MeOH)



-----文献-----

Witczak, Z.J. et al., Carbohydr. Res., 1984, 133, 235, (合成法, H-NMR, C13-NMR)

Kindel, P.K. et al., Carbohydr. Res., 1990, 199, 55, (acetal derivs)

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1583-1586, (分離)

§ 10-Hydroxy-8-nor-2-fenchanone; *O*-β-D-Glucopyranoside

[CAS No.]240495-82-3

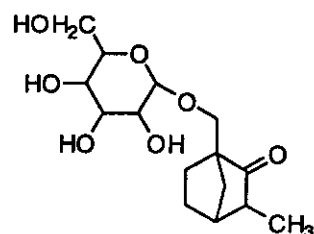
[化合物分類]テルペノイド(Fenchane monoterpenoids)

[構造式]

[分子式] $C_{15}H_{24}O_7$

[分子量]316.35

[基原]*Foeniculum vulgare*



[性状] 無定型の粉末  
[比旋光度]:  $[\alpha]_D^{25} -7.7$  (c, 0.1 in MeOH)

----- 文献 -----

Ishikawa, T. et al., Chem. Pharm. Bull., 1999, 47, 805-808, (分離, H-NMR, C13-NMR)

§ 1-(4-Hydroxyphenyl)-1,2-propanediol; (1R,2S)-form, 4'-Me ether, 1-O-β-D-glucopyranoside

[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

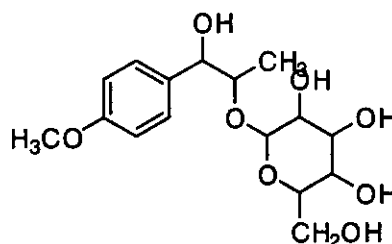
[分子式]  $C_{16}H_{20}O_8$

[分子量] 344.361

[基原] *Foeniculum vulgare* (ウイキョウ)

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{26} -61$  (c, 0.3 in MeOH)



----- 文献 -----

St. Pfau, A., Helv. Chim. Acta, 1939, 22, 382, (分離, Me ether)

Stadler, M. et al., Planta Med., 1994, 60, 128-132, (分離, Me ether)

Ono, M. et al., Chem. Pharm. Bull., 1996, 44, 337-342, (分離, Me ether)

Nakamura, T. et al., Chem. Pharm. Bull., 1996, 44, 1908, (分離, Me ether)

Pelter, A. et al., Tetrahedron, 1996, 52, 1085-1094, (合成法, Me ether)

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1591-1594, (分離, 配糖体)

§ 1-(4-Hydroxyphenyl)-1,2-propanediol; (1R,2S)-form, 4'-Me ether, 2-O-β-D-glucopyranoside

[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

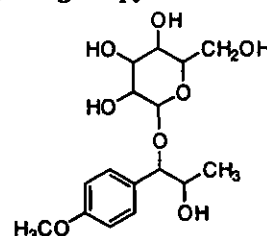
[分子式]  $C_{16}H_{20}O_8$

[分子量] 344.361

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{25} -28.3$  (c, 0.3 in MeOH)



----- 文献 -----

St. Pfau, A., Helv. Chim. Acta, 1939, 22, 382, (分離, Me ether)

Stadler, M. et al., Planta Med., 1994, 60, 128-132, (分離, Me ether)

Ono, M. et al., Chem. Pharm. Bull., 1996, 44, 337-342, (分離, Me ether)

Nakamura, T. et al., Chem. Pharm. Bull., 1996, 44, 1908, (分離, Me ether)

Balboul, B.A.A.A. et al., Phytochemistry, 1996, 42, 1191, (分離, UV, IR, H-NMR, C13-NMR)

Pelter, A. et al., Tetrahedron, 1996, 52, 1085-1094, (合成法, Me ether)

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1591-1594, (分離, 配糖体)

§ 1-(4-Hydroxyphenyl)-1,2-propanediol; (1S,2R)-form, 4'-Me ether, 1-O-β-D-glucopyranoside

[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

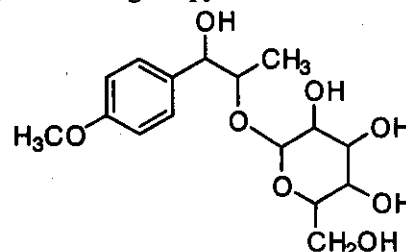
[分子式]  $C_{16}H_{20}O_8$

[分子量] 344.361

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{26} +13.8$  (c, 0.9 in MeOH)



----- 文献 -----

St. Pfau, A., Helv. Chim. Acta, 1939, 22, 382, (分離, Me ether)

Ayer, W.A. et al., J. Nat. Prod., 1993, 56, 85, (分離, 誘導體)

Stadler, M. et al., Planta Med., 1994, 60, 128-132, (分離, Me ether)

Ono, M. et al., Chem. Pharm. Bull., 1996, 44, 337-342, (分離, Me ether)

Nakamura, T. et al., Chem. Pharm. Bull., 1996, 44, 1908, (分離, Me ether)

Pelter, A. et al., Tetrahedron, 1996, 52, 1085-1094, (合成法, Me ether)

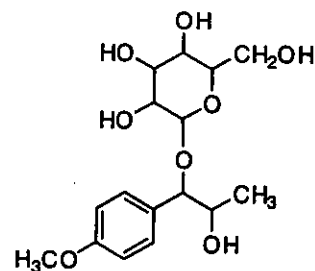
Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1591-1594, (分離, 配糖体)



§ 1-(4-Hydroxyphenyl)-1,2-propanediol; (1S,2R)-form, 4'-Me ether, 2-O-β-D-glucopyranoside

[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]



[分子式] C<sub>16</sub>H<sub>22</sub>O<sub>8</sub>

[分子量] 344.361

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>20</sup> -15 (c, 0.5 in MeOH)

-----文献-----

St. Pfau, A., *Helv. Chim. Acta*, 1939, 22, 382, (分離, Me ether)

Ayer, W.A. et al., *J. Nat. Prod.*, 1993, 56, 85, (分離, 誘導體)

Stadler, M. et al., *Planta Med.*, 1994, 60, 128-132, (分離, Me ether)

Ono, M. et al., *Chem. Pharm. Bull.*, 1996, 44, 337-342, (分離, Me ether)

Nakamura, T. et al., *Chem. Pharm. Bull.*, 1996, 44, 1908, (分離, Me ether)

Balboul, B.A.A.A. et al., *Phytochemistry*, 1996, 42, 1191, (分離, UV, IR, H-NMR, C13-NMR)

Kitajima, J. et al., *Chem. Pharm. Bull.*, 1998, 46, 1591-1594, (分離, 配糖体)

§ 1-(4-Hydroxyphenyl)-1,2-propanediol; (1R\*,2R\*)-form, 4'-Me ether

[CAS No.] 112018-74-3

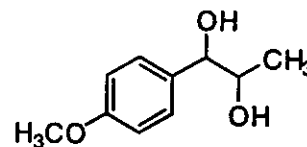
[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

[分子式] C<sub>10</sub>H<sub>14</sub>O<sub>3</sub>

[分子量] 182.219

[基原] *Pleurotus pulmonarius*, 次の植物から分離: *Foeniculum vulgare* の果実



-----文献-----

St. Pfau, A., *Helv. Chim. Acta*, 1939, 22, 382, (分離, Me ether)

Stadler, M. et al., *Planta Med.*, 1994, 60, 128-132, (分離, Me ether)

Ono, M. et al., *Chem. Pharm. Bull.*, 1996, 44, 337-342, (分離, Me ether)

Nakamura, T. et al., *Chem. Pharm. Bull.*, 1996, 44, 1908, (分離, Me ether)

Pelter, A. et al., *Tetrahedron*, 1996, 52, 1085-1094, (合成法, Me ether)

Kitajima, J. et al., *Chem. Pharm. Bull.*, 1998, 46, 1591-1594, (分離, 配糖体)

§ 1-(4-Hydroxyphenyl)-1,2-propanediol; (1R\*,2S\*)-form, 4'-Me ether

[CAS No.] 103687-27-0

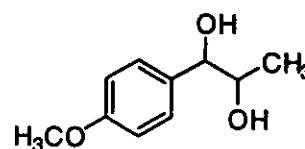
[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

[分子式] C<sub>10</sub>H<sub>14</sub>O<sub>3</sub>

[分子量] 182.219

[基原] 次の植物から分離: *Foeniculum vulgare* の果実



-----文献-----

St. Pfau, A., *Helv. Chim. Acta*, 1939, 22, 382, (分離, Me ether)

Stadler, M. et al., *Planta Med.*, 1994, 60, 128-132, (分離, Me ether)

Ono, M. et al., *Chem. Pharm. Bull.*, 1996, 44, 337-342, (分離, Me ether)

Nakamura, T. et al., *Chem. Pharm. Bull.*, 1996, 44, 1908, (分離, Me ether)

Pelter, A. et al., *Tetrahedron*, 1996, 52, 1085-1094, (合成法, Me ether)

Kitajima, J. et al., *Chem. Pharm. Bull.*, 1998, 46, 1591-1594, (分離, 配糖体)

§ 1-(4-Hydroxyphenyl)-1,2-propanediol; (1RS,2RS)-form, 4'-O-β-D-Glucopyranoside

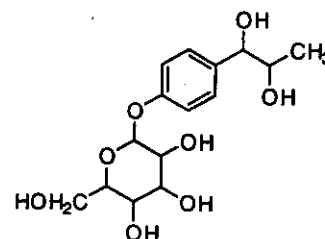
[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

[分子式] C<sub>15</sub>H<sub>22</sub>O<sub>8</sub>

[分子量] 330.334

[基原] *Foeniculum vulgare*



[性状] 無定型の粉末  
[比旋光度]:  $[\alpha]_D^{25} -48.5$  (c, 0.2 in MeOH)

-----文献-----

- St. Pfau, A., *Helv. Chim. Acta*, 1939, 22, 382, (分離, Me ether)  
Ayer, W.A. et al., *J. Nat. Prod.*, 1993, 56, 85, (分離, 誘導體)  
Stadler, M. et al., *Planta Med.*, 1994, 60, 128-132, (分離, Me ether)  
Ono, M. et al., *Chem. Pharm. Bull.*, 1996, 44, 337-342, (分離, Me ether)  
Nakamura, T. et al., *Chem. Pharm. Bull.*, 1996, 44, 1908, (分離, Me ether)  
Pelter, A. et al., *Tetrahedron*, 1996, 52, 1085-1094, (合成法, Me ether)

§ 3-(4-Hydroxyphenyl)-1,2-propanediol; (±)-form, 4'-O-β-D-Glucopyranoside

[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

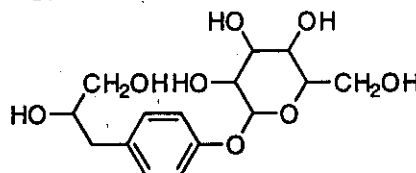
[分子式]  $C_{15}H_{22}O_8$

[分子量] 330.334

[基原] *Foeniculum vulgare* (ウイキョウ)

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{25} -57$  (c, 0.2 in MeOH)



-----文献-----

- Yamaguchi, A. et al., *CA*, 1970, 72, 132209w, (合成法)  
Ayer, W.A. et al., *Phytochemistry*, 1980, 19, 2717-2721, (分離, IR, H-NMR)  
Kitajima, J. et al., *Chem. Pharm. Bull.*, 1998, 46, 1591-1594, (分離, 配糖体)

§ 3-(4-Hydroxyphenyl)-1-propanol; 4'-Me ether, 1-O-(2-O-sulfo-β-D-glucopyranoside)

[CAS No.] 217971-99-8

[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

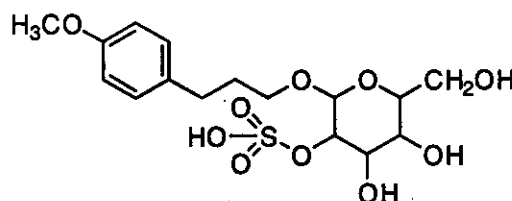
[分子式]  $C_{16}H_{24}O_{10}S$

[分子量] 408.426

[基原] ウイキョウ (*Foeniculum vulgare*)

[性状] 無定型の粉末 (as Na salt)

[比旋光度]:  $[\alpha]_D -25.5$  (c, 0.3 in MeOH) (Na salt)



-----文献-----

- Marvell, E.N. et al., *Tetrahedron*, 1966, 22, 861-866, (4'-Me ether)  
Kitajima, J. et al., *Chem. Pharm. Bull.*, 1998, 46, 1587-1590, (4'-Me, 1-sulfoglucoside)

§ 3-(4-Hydroxyphenyl)-2-propen-1-ol; (E)-form, 1-Me ether, 4'-O-β-D-glucopyranoside

[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

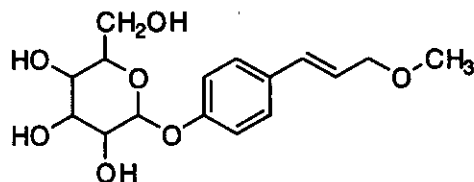
[分子式]  $C_{16}H_{22}O_7$

[分子量] 326.346

[基原] ウイキョウ (*Foeniculum vulgare*)

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{25} -60$  (c, 0.2 in MeOH)



-----文献-----

- Kitajima, J. et al., *Chem. Pharm. Bull.*, 1998, 46, 1587-1590, (1-Me-4'-glucoside)

§ p-Menthane-7,8-diol; (1RS,4RS)-form, 7-O-β-D-Glucopyranoside

[CAS No.] 217962-30-6

[化合物分類] テルペノイド (p-Menthane monoterpeneoids)

[構造式]

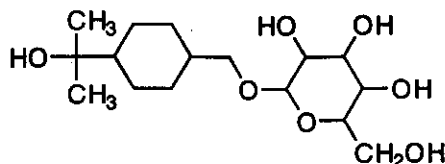
[分子式]  $C_{16}H_{30}O_7$

[分子量] 334.409

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{25} -23.1$  (c, 0.8 in MeOH)



-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1603-1606, (分離, H-NMR, C13-NMR)

§ *p*-Menthane-7,8-diol; (1*RS*,4*RS*)-form, 8-*O*-β-D-Glucopyranoside

[CAS No.] 217962-31-7

[化合物分類] テルペノイド (p-Menthane monoterpenoids)

[構造式]

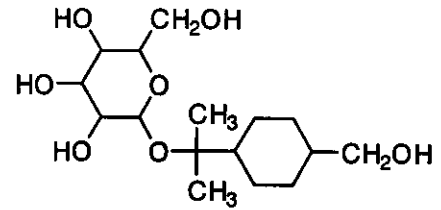
[分子式] C<sub>16</sub>H<sub>30</sub>O<sub>7</sub>

[分子量] 334.409

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>22</sup> +7.5 (c, 0.2 in MeOH)



-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1603-1606, (分離, H-NMR, C13-NMR)

§ *p*-Menthane-1,7,8-triol; (1*RS*,4*RS*)-form

[化学名・別名] *cis*-form

[CAS No.] 154843-72-8

[化合物分類] テルペノイド (p-Menthane monoterpenoids)

[構造式]

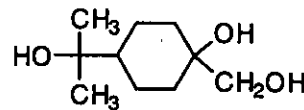
[分子式] C<sub>10</sub>H<sub>20</sub>O<sub>3</sub>

[分子量] 188.266

[基原] *Foeniculum vulgare*

[性状] 針状結晶 (MeOH)

[融点] Mp 137-139 °C



-----文献-----

Konda, Y. et al., J. Nat. Prod., 1992, 55, 1118, (分離, H-NMR, C13-NMR)

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1603-1606, (分離, H-NMR, C13-NMR)

§ *p*-Menthane-1,7,8-triol; (1*RS*,4*RS*)-form, 8-*O*-β-D-Glucopyranoside

[CAS No.] 217962-29-3

[化合物分類] テルペノイド (p-Menthane monoterpenoids)

[構造式]

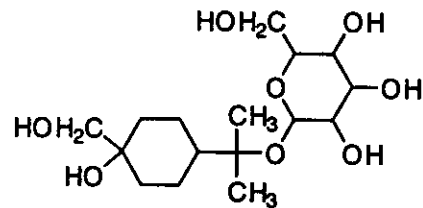
[分子式] C<sub>16</sub>H<sub>30</sub>O<sub>7</sub>

[分子量] 350.408

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>22</sup> -12.8 (c, 0.4 in MeOH)



-----文献-----

Konda, Y. et al., J. Nat. Prod., 1992, 55, 1118, (分離, H-NMR, C13-NMR)

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1603-1606, (分離, H-NMR, C13-NMR)

§ *p*-Menthane-1,7,8-triol; (1*RS*,4*SR*)-form

[化学名・別名] *trans*-form

[CAS No.] 154843-85-3

[化合物分類] テルペノイド (p-Menthane monoterpenoids)

[構造式]

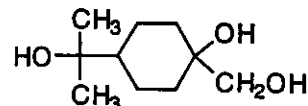
[分子式] C<sub>10</sub>H<sub>20</sub>O<sub>3</sub>

[分子量] 188.266

[基原] *Foeniculum vulgare*

[性状] 針状結晶 (MeOH)

[融点] Mp 107-109 °C



-----文献-----

Konda, Y. et al., J. Nat. Prod., 1992, 55, 1118, (分離, H-NMR, C13-NMR)

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1603-1606, (分離, H-NMR, C13-NMR)

§ *p*-Menthane-1,7,8-triol; (1*RS*,4*SR*)-form, 8-*O*-β-D-Glucopyranoside

[CAS No.] 217962-28-2

[化合物分類] テルペノイド (p-Menthane monoterpeneoids)

[構造式]

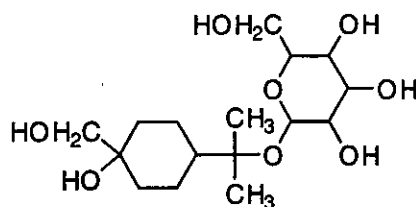
[分子式]  $C_{16}H_{30}O_8$

[分子量] 350.408

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{22} -10$  (c, 0.2 in MeOH)



----- 文献 -----

Konda, Y. et al., J. Nat. Prod., 1992, 55, 1118, (分離, H-NMR, C13-NMR)

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1603-1606, (分離, H-NMR, C13-NMR)

§ *p*-Menth-1-ene-7,8-diol; (*R*)-form, 8-*O*-β-D-Glucopyranoside

[CAS No.] 217962-32-8

[化合物分類] テルペノイド (p-Menthane monoterpeneoids)

[構造式]

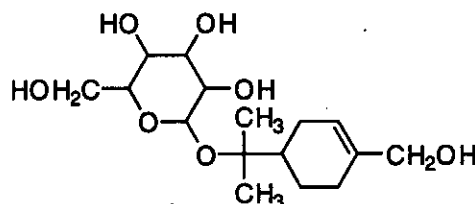
[分子式]  $C_{16}H_{28}O_7$

[分子量] 332.393

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{22} +7.5$  (c, 0.2 in MeOH)



----- 文献 -----

Tan, R.X. et al., Phytochemistry, 1991, 30, 583, (分離, H-NMR, C13-NMR)

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1595-1598; 1999, 47, 639-642, (配糖体)

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1603-1606, (配糖体)

§ 3-Methyl-1-butanol; *O*-β-D-Glucopyranoside

[化学名・別名] Isopentyl β-D-glucoside

[構造式]

[分子式]  $C_{11}H_{22}O_6$

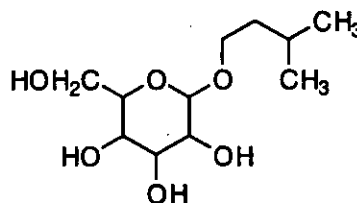
[分子量] 250.291

[基原] *Foeniculum vulgare*

[性状] 針状結晶 (MeOH)

[融点] Mp 86-88 °C

[比旋光度]:  $[\alpha]_D^{22} -33$  (c, 0.7 in MeOH)



----- 文献 -----

Bieber, H., Encycl. Chem. Process. Des., 1977, 3, 278, (レビュー)

Opdyke, D.L.J., Food Cosmet. Toxicol., 1978, 16, 785, (レビュー, 毒性)

Kirk-Othmer Encycl. Chem. Technol., 4th edn., Wiley, 1991, 2, 709, (レビュー)

Fenaroli's Handbook of Flavor Ingredients, 3rd edn., (ed. Burdock, G.A.), CRC Press, 1995, 1, 483, (2-methylpropanoyl)

Tiers, G.V.D., Acta Chem. Scand., 1998, 52, 1223-1233, (Me ether)

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1643-1646, (分離, 配糖体)

Lewis, R.J., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, IHO850; IHP000; IHP400

§ 2-Methyl-2-buten-1-ol; (*E*)-form, *O*-β-D-Glucopyranoside

[化合物分類] 脂肪族化合物 (Branched alkenic alcohols), テルペノイド

(Hemiterpenoids)

[構造式]

[分子式]  $C_{11}H_{20}O_6$

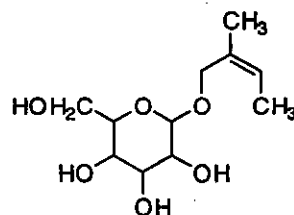
[分子量] 248.275

[基原] *Foeniculum vulgare*

[性状] 針状結晶 (MeOH)

[融点] Mp 55-56 °C

[比旋光度]:  $[\alpha]_D^{22} -15.8$  (c, 0.2 in MeOH)



----- 文献 -----

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1643-1646, (配糖体)

§ 7-Methyl-3-methylene-1,2,6,7-octanetetrol; (2*R*,6*ξ*)-form, 2-*O*-β-D-Glucopyranoside

[CAS No.] 219814-32-1

[化合物分類]テルペノイド (Acyclic monoterpenoids)

[構造式]

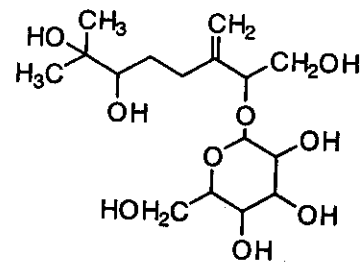
[分子式] C<sub>16</sub>H<sub>30</sub>O<sub>9</sub>

[分子量] 366.408

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>25</sup> -51.4 (c, 0.3 in MeOH)



-----文献-----

Kitajima, J. et al., Chem. Pharm. Bull., 1993, 41, 1667-1669, (分離, H-NMR, C13-NMR)

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1748-1751, (分離, H-NMR, C13-NMR)

§ 7-Methyl-3-methylene-1,2,6,7-octanetetrol; (2*ξ*,6*ξ*)-form

[CAS No.] 217449-59-7

[化合物分類]テルペノイド (Acyclic monoterpenoids)

[構造式]

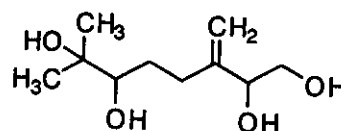
[分子式] C<sub>10</sub>H<sub>20</sub>O<sub>4</sub>

[分子量] 204.266

[基原] *Foeniculum vulgare*

[性状] シロップ

[その他のデータ] diastereoisomers の混合物



-----文献-----

Kitajima, J. et al., Chem. Pharm. Bull., 1993, 41, 1667-1669, (分離, H-NMR, C13-NMR)

Ishikawa, T. et al., Chem. Pharm. Bull., 1998, 46, 1748-1751, (分離, H-NMR, C13-NMR)

§ 7-Methyl-3-methylene-1,6,7-octanetriol

[CAS No.] 240495-78-7

[化合物分類]テルペノイド (Acyclic monoterpenoids)

[構造式]

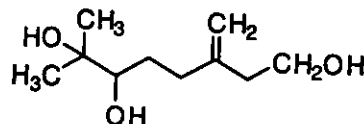
[分子式] C<sub>10</sub>H<sub>20</sub>O<sub>3</sub>

[分子量] 188.266

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>25</sup> -23 (c, 0.1 in MeOH)



-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1999, 47, 805-808, (分離, H-NMR, C13-NMR)

§ Miyabenol C; (Z)-form

[化学名・別名] *cis*-Miyabenol C

[CAS No.] 168037-22-7

[化合物分類] 単環芳香族 (Stilbene polymers)

[構造式]

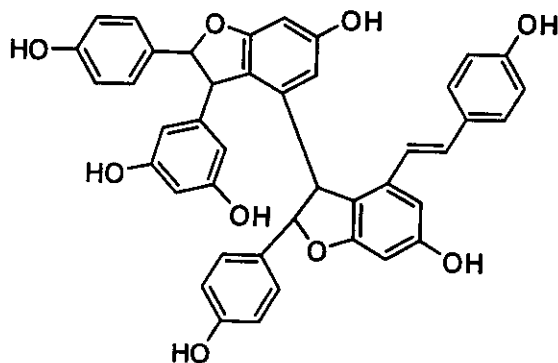
[分子式] C<sub>42</sub>H<sub>32</sub>O<sub>9</sub>

[分子量] 680.709

[基原] *Foeniculum vulgare* の果実

[性状] 黄色がかった粉末

[比旋光度]: [α]<sub>D</sub><sup>25</sup> +98.5 (c, 1 in MeOH)



-----文献-----

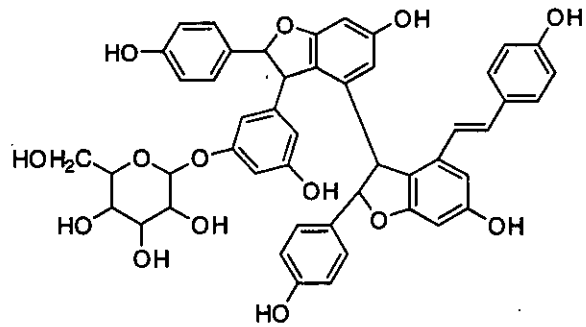
Suzuki, K. et al., Agric. Biol. Chem., 1987, 51, 1003, (Miyabenol C)

§ Miyabenol C; (Z)-form, 3'-*O*-β-D-Glucopyranoside

[化学名・別名] Foeniculose I

[CAS No.] 168010-10-4

[化合物分類] 単環芳香族 (Stilbene polymers)  
[構造式]



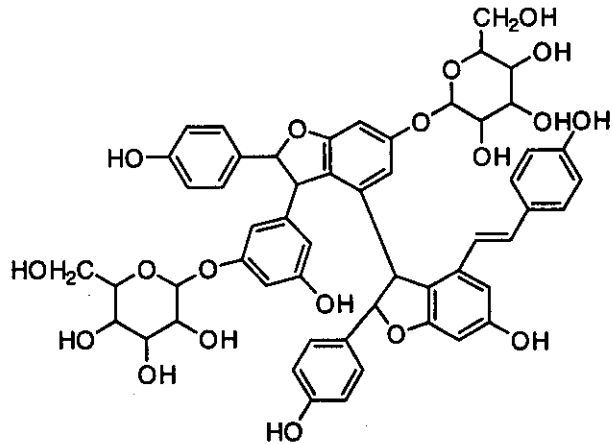
[分子式]  $C_{28}H_{32}O_{14}$   
[分子量] 842.851  
[基原] *Foeniculum vulgare* の果実  
[性状] 青白い黄色の粉末  
[比旋光度]:  $[\alpha]_D^{25} +46.8$  (c, 0.9 in MeOH)

----- 文献 -----

Ono, M. et al., Chem. Pharm. Bull., 1995, 43, 868, (Foeniculosides)

§ Miyabenol C; (Z)-form, 3',6-Di-O-β-D-glucopyranoside

[化学名・別名] Foeniculoside III  
[CAS No.] 168010-12-6  
[化合物分類] 単環芳香族 (Stilbene polymers)  
[構造式]



[分子式]  $C_{34}H_{32}O_{19}$   
[分子量] 1004.993  
[基原] *Foeniculum vulgare* の果実  
[性状] 青白い黄色の粉末  
[比旋光度]:  $[\alpha]_D^{25} +41.9$  (c, 1 in MeOH)

----- 文献 -----

Ono, M. et al., Chem. Pharm. Bull., 1995, 43, 868, (Foeniculosides)

§ 3,3',4',5,7-Pentahydroxyflavone; 3-O-[β-D-Glucopyranosyl-(1→?)]-β-D-glucuronopyranoside]

[化学名・別名] Nelumboside  
[CAS No.] 93252-57-4  
[化合物分類] フラボノイド (Flavonols; 5 × O-置換基)  
[構造式] 有効な構造式はない

[分子式]  $C_{27}H_{26}O_{18}$   
[分子量] 640.507  
[基原] 次の植物から分離: *Nelumbo nucifera* の葉, *Cosmos bipinnatus*, *Foeniculum vulgare*  
[性状] 黄色の針状結晶 (H<sub>2</sub>O)  
[融点] Mp 174-175 °C  
[比旋光度]:  $[\alpha]_D^{26} -21.1$  (H<sub>2</sub>O)

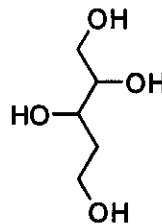
----- 文献 -----

Nakaoki, T. et al., Yakugaku Zasshi, 1956, 76, 323; 1961, 81, 1158, (Reynoutrin, Nelumboside)

§ 1,2,3,5-Pentanetetrol; (2R,3S)-form

[化学名・別名] 2-Deoxy-D-ribitol  
[化合物分類] 炭水化物 (Pentitols), 炭水化物 (2-Deoxy sugars)  
[構造式]

[分子式]  $C_5H_{12}O_4$   
[分子量] 136.147  
[基原] *Foeniculum vulgare* の果実  
[性状] シロップ  
[比旋光度]:  $[\alpha]_D^{25} -20$  (c, 0.3 in H<sub>2</sub>O).  $[\alpha]_D -17$  (c, 0.3 in MeOH)



----- 文献 -----

Kitajima, J. et al., Chem. Pharm. Bull., 1999, 47, 988-992, (分離, H-NMR, C13-NMR)

§ 1,2,4,5-Pentanetetrol; (2S,4S)-form

[化学名・別名] D-threo-form. 3-Deoxy-D-arabinitol

[CAS No.] 92691-36-6

[化合物分類] 炭水化物 (3-Deoxy sugars), 炭水化物 (Pentitols)

[構造式]

[分子式] C<sub>5</sub>H<sub>12</sub>O<sub>4</sub>

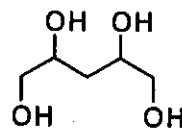
[分子量] 136.147

[基原] *Foeniculum vulgare* の果実

[性状] 結晶 (EtOH/Et<sub>2</sub>O) もしくはシロップ

[融点] Mp 73-75 °C. Mp 102 °C (二相性)

[比旋光度]: [α]<sub>D</sub><sup>18</sup> +31 (c, 0.4 in H<sub>2</sub>O) (合成品). [α]<sub>D</sub><sup>22</sup> -46 (c, 1.03 in EtOH) (合成品). [α]<sub>D</sub><sup>22</sup> -11 (c, 0.1 in H<sub>2</sub>O) (天然物). [α]<sub>D</sub><sup>20</sup> -34.5 (c, 0.1 in MeOH) (天然物)



-----文献-----

Ritchie, R.G.S. et al., Can. J. Chem., 1978, 56, 794-802, (誘導體, 合成法, IR, glc, H-NMR)

Tsuda, Y. et al., Chem. Pharm. Bull., 1980, 28, 920-925, (合成法, 誘導體)

Katajima, J. et al., Chem. Pharm. Bull., 1999, 47, 988, (分離)

§ 2-Propanol; O-β-D-Glucopyranoside

[化学名・別名] Isopropyl β-D-glucoside

[CAS No.] 5391-17-3

[化合物分類] 炭水化物 (gluco-Hexoses)

[構造式]

[分子式] C<sub>9</sub>H<sub>18</sub>O<sub>6</sub>

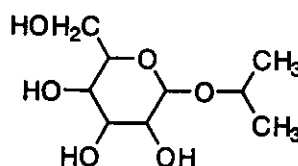
[分子量] 222.238

[基原] *Anoectochilus formosanus*, *Foeniculum vulgare*

[性状] 針状結晶 (MeOH)

[融点] Mp 129-131 °C

[比旋光度]: [α]<sub>D</sub><sup>25</sup> -54.9 (Py). [α]<sub>D</sub><sup>23</sup> -35.6 (c, 1.1 in MeOH)



-----文献-----

Sharma, P. et al., J. Nat. Prod., 1989, 52, 395-397, (α-D-glucoside)

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1643-1646, (β-D-glucoside)

§ 5-(2-Propenyl)-1,2,3-benzenetriol; 2-Me ether, 1-O-β-D-glucopyranoside

[化学名・別名] Sphalleroside A

[CAS No.] 192324-34-8

[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

[分子式] C<sub>16</sub>H<sub>22</sub>O<sub>8</sub>

[分子量] 342.345

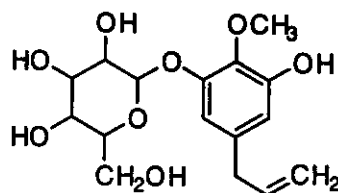
[基原] *Foeniculum vulgare*, *Sphallerocarpus gracilis*

[性状] 結晶

[融点] Mp 185-186 °C (145-147 °C)

[比旋光度]: [α]<sub>D</sub><sup>21</sup> -48 (c, 0.8 in MeOH)

[その他のデータ] Data of two isolates is at variance



-----文献-----

Chen, N.Y. et al., Indian J. Chem., Sect. B, 1997, 36, 107-109, (Sphalleroside A)

§ 4-(1-Propenyl)phenol; (E)-form, 1',2'-Epoxide, Me ether

[化学名・別名] 2-(4-Methoxyphenyl)-3-methyloxirane. Epoxyanethole

[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

[分子式] C<sub>10</sub>H<sub>12</sub>O<sub>2</sub>

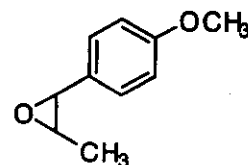
[分子量] 164.204

[基原] *Foeniculum vulgare*

[性状] 針状結晶

[融点] Mp 182-184 °C

[その他のデータ] Possesses threo-config. ラセミ体



-----文献-----

Kitajima, J. et al., Chem. Pharm. Bull., 1999, 47, 1448-1450, (Epoxyanethole)

Lewis, R.J., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, PMQ750; PMR000; PMR250, (Y)

§ Sinapyl alcohol; (E)-form, 1,4'-Di-O-β-D-glucopyranoside

[化学名・別名] Isosyringinoside

[CAS No.] 152686-85-6

[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

[分子式] C<sub>23</sub>H<sub>34</sub>O<sub>14</sub>

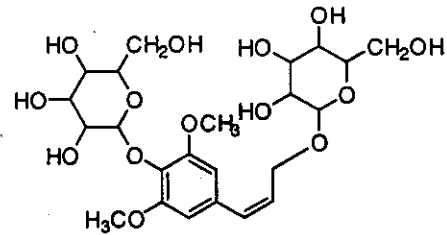
[分子量] 534.513

[基原] *Osmanthus asiaticus*. また *Foeniculum vulgare* (セリ科)

[性状] 針状結晶 (MeOH)

[融点] Mp 197-201 °C

[比旋光度]: [α]<sub>D</sub><sup>20</sup> -43 (c, 1 in H<sub>2</sub>O)



-----文献-----

Sugiyama, M. et al., Phytochemistry, 1993, 33, 1215, (Isosyringinoside)

Ono, M. et al., Chem. Pharm. Bull., 1996, 44, 337, (Isosyringinoside)

§ Sinapyl alcohol; (E)-form, 1-Me ether, 4'-O-β-D-glucopyranoside

[化学名・別名] Methylsyringin. Syringin methyl ether

[CAS No.] 139742-20-4

[化合物分類] 単環芳香族 (Simple phenylpropanoids)

[構造式]

[分子式] C<sub>18</sub>H<sub>26</sub>O<sub>8</sub>

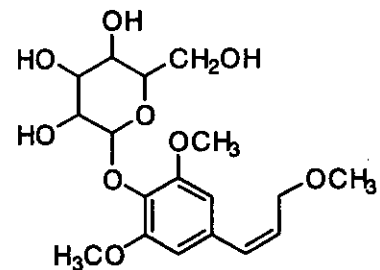
[分子量] 386.398

[基原] *Saussurea japonica*, *Foeniculum vulgare*

[性状] 針状結晶 (MeOH)

[融点] Mp 193-195 °C

[比旋光度]: [α]<sub>D</sub><sup>21</sup> -33.4 (c, 1.5 in Py)



-----文献-----

Kitajima, J. et al., Chem. Pharm. Bull., 1998, 46, 1587-1590, (Methylsyringin)

§ Stigmasta-5,22-dien-3-ol; (3β,22E,24S)-form, Hexadecanoyl

[化学名・別名] Palmitoylstigmasterol

[CAS No.] 2308-84-1

[化合物分類] ステロイド

(Stigmastane steroids)

(C<sub>29</sub>)

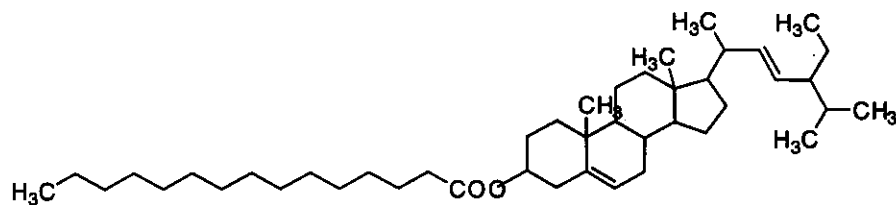
[構造式]

分子式 C<sub>45</sub>H<sub>76</sub>O<sub>2</sub>

[分子量] 651.11

[基原] 次の植物から分離: *Foeniculum vulgare*, *Plantago asiatica*

[融点] Mp 94-96 °C



-----文献-----

Kartnig, T. et al., Fette, Seifen, Anstrichm., 1965, 67, 10, (Palmitoylstigmasterol)

§ 2,4-Thujanediol; (1S,2S,4S,5S)-form, 4-O-β-D-Glucopyranoside

[CAS No.] 240495-81-2

[化合物分類] テルペノイド (Thujane monoterpeneoids)

[構造式]

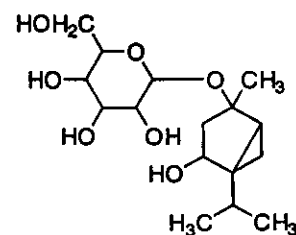
[分子式] C<sub>16</sub>H<sub>28</sub>O<sub>7</sub>

[分子量] 332.393

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>25</sup> -10 (c, 0.3 in MeOH)





-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1999, 47, 805-808, (分離, H-NMR, C13-NMR)

§ 2,4,7-Thujanetriol; (1S,2S,4S,5S)-form, 4-O-β-D-Glucopyranoside

[CAS No.] 240495-80-1

[化合物分類]テルペノイド (Thujane monoterpeneoids)

[構造式]

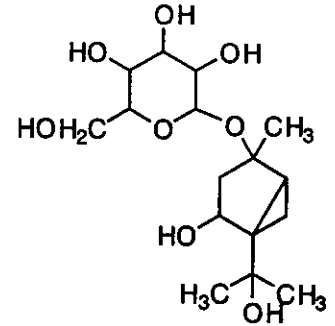
[分子式] C<sub>16</sub>H<sub>28</sub>O<sub>8</sub>

[分子量] 348.392

[基原] *Foeniculum vulgare*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>25</sup> -30 (c, 0.2 in MeOH)



-----文献-----

Ishikawa, T. et al., Chem. Pharm. Bull., 1999, 47, 805-808, (分離, H-NMR, C13-NMR)

§ 2,4,5-Trimethylbenzaldehyde

[化学名・別名] Duryl aldehyde

[CAS No.] 5779-72-6

[化合物分類] 単環芳香族 (Simple benzaldehydes)

[構造式] 構造式は次の化合物と類似: 2,3,4-Trimethylbenzaldehyde

[分子式] C<sub>10</sub>H<sub>12</sub>O

[分子量] 148.204

[基原] *Cyclorhiza waltonii*, *Eryngium foetidum*, *Foeniculum vulgare*

[性状] 板状結晶 (EtOH)

[融点] Mp 43.5 °C

[沸点] Bp 243 °C

[その他のデータ] 空気中で黄色に変わる

-----文献-----

Ma, X. et al., CA, 1990, 113, 74832w, (分離)

Fang, H.J. et al., CA, 1990, 113, 208414x, (分離)

§ § セリ科 (*Foeniculum vulgare* Miller var. *dulce* (de Candolle) Alex) の果実。

本調査研究では、成分に関する文献はなかった。

§ § セリ科 (*Foeniculum vulgare* Miller ssp. *piperita* (Ucria) Countinho) の果実。

本調査研究では、成分に関する文献はなかった。

\*\*\*\*\*フジバカマ (Fujibakama) \*\*\*\*\*

§ § キク科フジバカマ (*Eupatorium fortunei* Turczaninon) の地上部。

§ 8,14-Dihydroxy-1(10),4,11(13)-germacatrien-12,6-olide; (1(10) E,4E,6 α,8 β)-form, 8-(4-Hydroxy-2-hydroxymethyl-2-butenoyl) (E-), 14-Ac

[化学名・別名] Eupafortunin

[CAS No.] 107686-59-9

[化合物分類]テルペノイド (12,6-Germacranolide sesquiterpenoids)

[構造式]

[分子式] C<sub>22</sub>H<sub>28</sub>O<sub>6</sub>

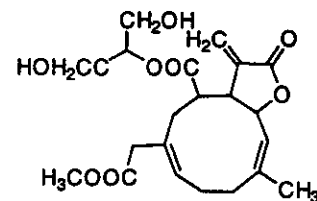
[分子量] 420.458

[基原] *Eupatorium fortunei*

[性状] オイル

[比旋光度]: [α]<sub>D</sub><sup>25</sup> +10.7 (c, 0.2 in MeOH)

UV: [neutral] λ<sub>max</sub> 213 (ε 17600) (MeOH)



-----文献-----

Haruna, M. et al., Chem. Pharm. Bull., 1986, 34, 5157-5160, (Eupafortunin)

\*\*\*\*\*フジモドキ (Fujimodoki) \*\*\*\*\*

§ § ジンチョウゲ科フジモドキ (*Daphne genkwa* Siebold et Zuccarini) の花蕾。

§ Aptosimol; (-)-form, 9-Ketone (lactone)

[化学名・別名] Genkdaphin

[化合物分類] リグナン化合物 (Side-chain oxygenated furofuranoid lignans)

[構造式]

[分子式]  $C_{20}H_{16}O_7$

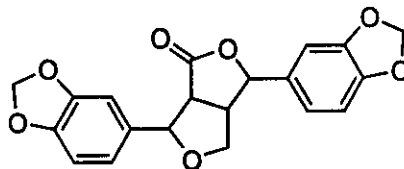
[分子量] 368.342

[基原] *Daphne genkwa*. Component of Yuan Hua

[性状] 結晶

[融点] Mp 118-119.5 °C

[比旋光度]:  $[\alpha]_D -64.8$  (c, 0.5 in  $CHCl_3$ )



-----文献-----

Wang, M. et al., Yaoxue Xuebao, 1990, 25, 866-868, (Genkdaphin)

§ Daphnetoxin; 12  $\beta$ -Acetoxy

[化学名・別名] Yuanhuafin

[CAS No.] 82870-43-7

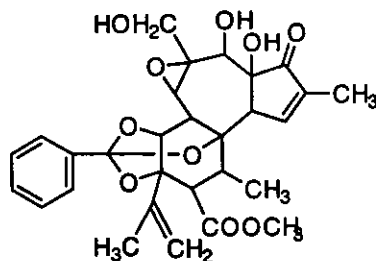
[化合物分類] テルペノイド (Daphnane diterpenoids)

[構造式]

[分子式]  $C_{29}H_{32}O_{10}$

[分子量] 540.566

[基原] *Daphne genkwa*



-----文献-----

Rizk, A.M. et al., Experientia, 1984, 40, 808, (Thymeleatoxins)

Hu, B. et al., CA, 1985, 103, 119933s, (Yuanhuatin)

Sha, H. et al., Huaxue Xuebao, 1986, 44, 843; CA, 105, 187602z, (Yuankuapin)

§ 4',5-Dihydroxy-7-methoxyflavone; 5-O- $[\beta$ -D-Xylopyranosyl-(1  $\rightarrow$  6)- $\beta$ -D-glucopyranoside]

[化学名・別名] Yuankanin

[CAS No.] 77099-20-8

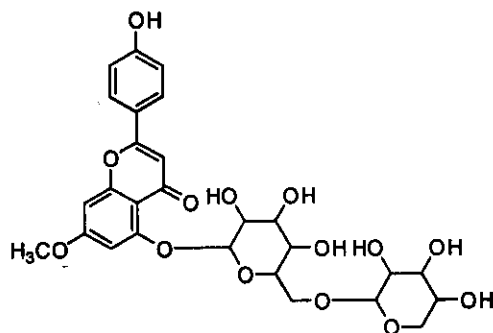
[化合物分類] フラボノイド (Flavones; 3  $\times$  O-置換基)

[構造式]

[分子式]  $C_{27}H_{30}O_{14}$

[分子量] 578.526

[基原] *Daphne genkwa*, *Daphne gnidium*



-----文献-----

Ragot, J. et al., Fitoterapia, 1988, 59, 336, (Yuankanin)

§ Genkwanol A

[CAS No.] 111103-90-3

[化合物分類] フラボノイド (Flavans),

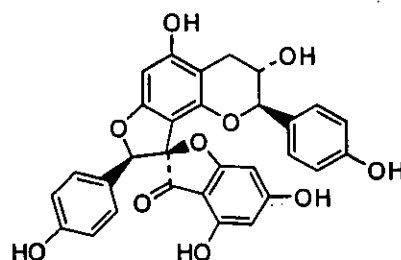
フラボノイド (Biflavonoids and polyflavonoids)

[構造式]

[分子式]  $C_{30}H_{22}O_{10}$

[分子量] 542.498

[基原] *Daphne genkwa* の根



-----文献-----

Baba, K. et al., Chem. Pharm. Bull., 1985, 33, 416; 1986, 34, 2680; 1987, 35, 1853, (結晶構造)  
 Baba, K. et al., Yakugaku Zasshi, 1987, 107, 525, (分離, 構造決定)

§ Genkwanol A; 3-Deoxy, 8,9-diepimer

[化学名・別名] Daphnodorin C

[CAS No.] 95733-04-3

[化合物分類] フラボノイド (Flavans), フラボノイド (Biflavonoids and polyflavonoids)

[構造式]

[分子式]  $C_{30}H_{22}O_8$

[分子量] 526.498

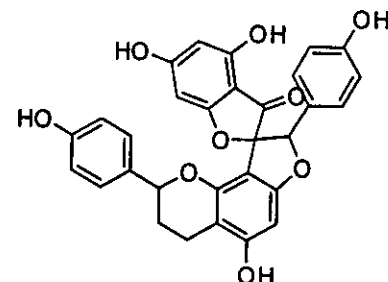
[基原] *Daphne genkwa*, *Daphne odora*

[性状] 青白い黄色の結晶 ( $CHCl_3/MeOH$ )

[融点] Mp 233-235 °Cで分解

[比旋光度]:  $[\alpha]_D^{22}$  -262.9 (dioxan)

[溶解性] BERDY SOL: メタノール, クロロホルム, EtOAc に可溶; 水に難溶



-----文献-----

Baba, K. et al., Chem. Pharm. Bull., 1985, 33, 416; 1986, 34, 2680; 1987, 35, 1853, (結晶構造)  
 Baba, K. et al., Yakugaku Zasshi, 1987, 107, 525, (分離, 構造決定)  
 Taniguchi, M. et al., Phytochemistry, 1996, 42, 1447, (Daphnodorin I)

§ Genkwanol B

[CAS No.] 142674-67-7

[化合物分類] フラボノイド (Biflavonoids and polyflavonoids)

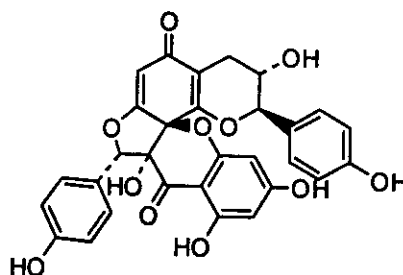
[構造式]

[分子式]  $C_{30}H_{22}O_{11}$

[分子量] 558.497

[基原] 次の植物の根から分離: *Daphne genkwa*

[性状] 青白い黄色の粉末



-----文献-----

Baba, K. et al., Phytochemistry, 1992, 31, 975, (分離, H-NMR, C13-NMR, UV, ord struct)  
 Baba, K. et al., Phytochemistry, 1993, 33, 913, (Genkwanol C)  
 Taniguchi, M. et al., Phytochemistry, 1998, 49, 863-867, (Daphnodorins)

§ Genkwanol B; 2',3',8-Triepimer

[化学名・別名] Genkwanol C

[CAS No.] 151283-11-3

[化合物分類] フラボノイド (Biflavonoids and polyflavonoids)

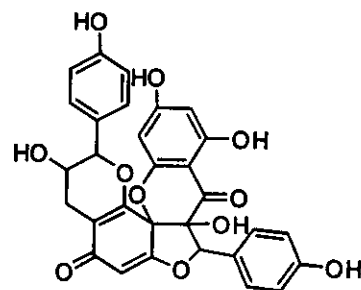
[構造式]

[分子式]  $C_{30}H_{22}O_{11}$

[分子量] 558.497

[基原] 次の植物の根から分離: *Daphne genkwa*

[性状] 青白い黄色の粉末



-----文献-----

Baba, K. et al., Phytochemistry, 1992, 31, 975, (分離, H-NMR, C13-NMR, UV, ord struct)  
 Baba, K. et al., Phytochemistry, 1993, 33, 913, (Genkwanol C)  
 Taniguchi, M. et al., Phytochemistry, 1998, 49, 863-867, (Daphnodorins)

§ Gnidilatidin

[化学名・別名] 12-(Benzoyloxy)-22,23,24,25-tetrahydrodioximexin (CAS 名). Odoracin. *Stillingia factor S*. Yuanhuacin. *Yuanhuacium ester A*

[CAS No.] 60195-70-2

[化合物分類] 薬物: 抗腫瘍薬 (Antineoplastic agents), 薬物: 墮胎薬 (Abortifacients), テルペノイド (Daphnane diterpenoids)

[構造式]

[分子式] C<sub>37</sub>H<sub>44</sub>O<sub>10</sub>

[分子量] 648.749

[基原] *Gnidia latifolia*, *Daphne odora*, *Daphne genkwa*,  
*Stillingia sylvatica*

[用途] 抗白血病性作用. Possesses abortifacient props.

[融点] Mp 204-206 °C

[比旋光度]: [α]<sub>D</sub><sup>25</sup> +61.7 (CHCl<sub>3</sub>)

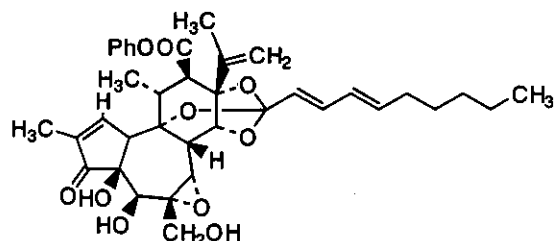
[溶解性] BERDY SOL: ベンゼン, メタノールに可溶;  
水に難溶

[Log P 計算値] Log P 2.79 (未確認値) (計算値)

UV: [neutral] λ<sub>max</sub> 228 (ε 44300) (EtOH) (Derep) [neutral] λ<sub>max</sub> 232 (ε 52700); 266 (ε 14500); 280 (ε 870) (MeOH) (Berdy) [neutral] λ<sub>max</sub> 227 (ε 44300) (EtOH) (Berdy)

[傷害・毒性] 50%致死量(LD<sub>50</sub>) (マウス, 腹膜内) 1.7 mg/kg

[化学物質毒性データ総覧(RTECS)登録番号] VW7800000



----- 文 献 -----

Kogiso, S. et al., Agric. Biol. Chem., 1976, 40, 2119, (分離)

Kupchan, S.M. et al., J.O.C., 1976, 41, 3850, (分離, UV, IR, H-NMR)

Ying, B.-P. et al., CA, 1978, 89, 39369, (分離)

Hecker, A.W. et al., Tet. Lett., 1980, 2887, (分離)

Adolf, W. et al., Tet. Lett., 1980, 21, 2887, (分離)

Wang, C. et al., Huaxue Xuebao, 1981, 39, 421; CA, 96, 82687, (Yuanhuadin)

Borris, R.P. et al., J. Nat. Prod., 1984, 47, 270, (分離, 性質)

Hall, I.H. et al., Eur. J. Cancer Clin. Oncol., 1986, 22, 45, (性質)

\*\*\*RTECS (化学物質毒性データ)\*\*\*

生体影響物質 : 変異原性物質.

\*\*\*健康障害に関するデータ\*\*\*

\*\*\*急性毒性に関するデータ\*\*\*

<<試験方法>> LD50 試験(50%致死量試験).

曝露経路 : 腹腔内投与.

被験動物 : げっ歯類-マウス.

投与量・期間: 1700 ug/kg

毒性影響 : 致死量以外に毒性影響に関する報告はない.

参照文献

Shengzhi Yu Biyun. Reproduction and Contraception. (China International Book Trading Corp., POB 2820, Beijing, Peop. Rep. China) 9(2), 48, 1989

\*\*\*変異原性に関するデータ\*\*\*

<<試験方法>> DNA 阻害.

試験系 : ヒトの細胞(種は未特定).

投与量・期間: 6020 nmol/L

参照文献

European Journal of Cancer and Clinical Oncology. (Pergamon Press, c/o Elsevier Science, 660 White Plains Rd., Tarrytown, NY 10591) 22, 45, 1986

<<試験方法>> DNA 阻害.

試験系 : げっ歯類-マウス白血球.

投与量・期間: 8400 nmol/L

参照文献

European Journal of Cancer and Clinical Oncology. (Pergamon Press, c/o Elsevier Science, 660 White Plains Rd., Tarrytown, NY 10591) 22, 45, 1986

§ Gnidilatidin; 12-Debenzoyl, 12-Ac

[化学名・別名] Yuanhuadin

[CAS No.] 76402-66-9

[化合物分類] テルペノイド (Daphnane diterpenoids)

[構造式]

[分子式] C<sub>32</sub>H<sub>42</sub>O<sub>10</sub>

[分子量] 586.678

[基原] *Daphne genkwa*

