

Schultz, S. et al., *Phytochemistry*, 2000, 54, 325-336

§ 12,14-Triacontanedione

[化合物分類] 脂肪族化合物 (Saturated unbranched aldehydes and ketones)

[構造式]  $\text{H}_3\text{C}(\text{CH}_2)_{15}\text{COCH}_2\text{CO}(\text{CH}_2)_{10}\text{CH}_3$

[分子式]  $\text{C}_{30}\text{H}_{58}\text{O}_2$

[分子量] 450.787

[基原] *Helianthus annuus* の花粉

-----文献-----

Schultz, S. et al., *Phytochemistry*, 2000, 54, 325-336

§ 4,6-Tricosanedione

[化合物分類] 脂肪族化合物 (Saturated unbranched aldehydes and ketones)

[構造式]  $\text{H}_3\text{C}(\text{CH}_2)_{16}\text{COCH}_2\text{COCH}_2\text{CH}_2\text{CH}_3$

[分子式]  $\text{C}_{23}\text{H}_{44}\text{O}_2$

[分子量] 352.599

[基原] *Helianthus annuus* の花粉

-----文献-----

Schultz, S. et al., *Phytochemistry*, 2000, 54, 325-336, (分離, 合成法)

§ 4,6-Tricosanedione; 4-Alcohol

[化学名・別名] 4-Hydroxy-6-tricosanone

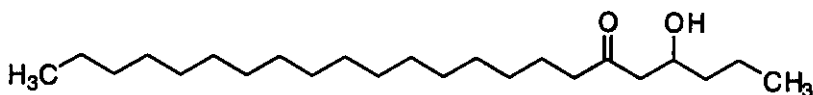
[化合物分類] 脂肪族化合物 (Saturated unbranched aldehydes and ketones)

[構造式]

[分子式]  $\text{C}_{23}\text{H}_{46}\text{O}_2$

[分子量] 354.615

[基原] *Helianthus annuus* の花粉



-----文献-----

Schultz, S. et al., *Phytochemistry*, 2000, 54, 325-336, (分離, 合成法)

§ 4,6-Tricosanedione; 6-Alcohol

[化学名・別名] 6-Hydroxy-4-tricosanone

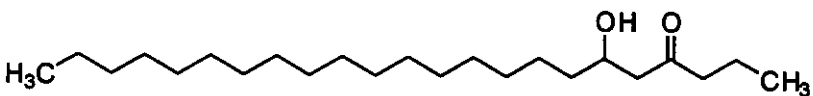
[化合物分類] 脂肪族化合物 (Saturated unbranched aldehydes and ketones)

[構造式]

[分子式]  $\text{C}_{23}\text{H}_{46}\text{O}_2$

[分子量] 354.615

[基原] *Helianthus annuus* の花粉



-----文献-----

Schultz, S. et al., *Phytochemistry*, 2000, 54, 325-336, (分離, 合成法)

§ 6,8-Tricosanedione

[化合物分類] 脂肪族化合物 (Saturated unbranched aldehydes and ketones)

[構造式]  $\text{H}_3\text{C}(\text{CH}_2)_{11}\text{COCH}_2\text{CO}(\text{CH}_2)_4\text{CH}_3$

[分子式]  $\text{C}_{23}\text{H}_{44}\text{O}_2$

[分子量] 352.599

[基原] *Helianthus annuus* の花粉

-----文献-----

Schultz, S. et al., *Phytochemistry*, 2000, 54, 325-336, (分離, 合成法)

§ 6,8-Tricosanedione; 6-Alcohol

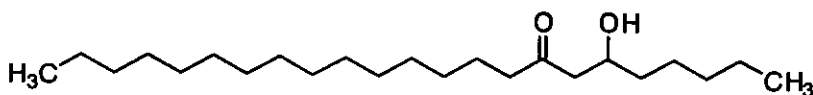
[化学名・別名] 6-Hydroxy-8-tricosanone

[化合物分類] 脂肪族化合物 (Saturated unbranched aldehydes and ketones)

[構造式]

[分子式]  $\text{C}_{23}\text{H}_{46}\text{O}_2$

[分子量] 354.615



[基原] *Helianthus annuus* の花粉

-----文献-----

Schultz, S. et al., *Phytochemistry*, 2000, 54, 325-336, (分離, 合成法)

§ 6,8-Tricosanedione; 8-Alcohol

[化学名・別名] 8-Hydroxy-6-tricosanone

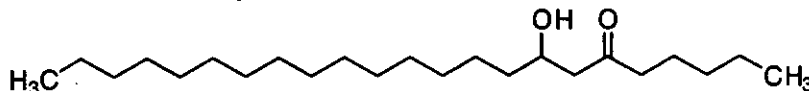
[化合物分類] 脂肪族化合物 (Saturated unbranched aldehydes and ketones)

[構造式]

[分子式]  $C_{23}H_{46}O_2$

[分子量] 354.615

[基原] *Helianthus annuus* の花粉



-----文献-----

Schultz, S. et al., *Phytochemistry*, 2000, 54, 325-336, (分離, 合成法)

§ 4',7,8-Trihydroxyflavanone; (S)-form, 8-Me ether

[化学名・別名] 4',7-Dihydroxy-8-methoxyflavanone. Heliannone C

[化合物分類] フラボノイド (Flavanones; 3 × O-置換基)

[構造式]

[分子式]  $C_{16}H_{14}O_5$

[分子量] 286.284

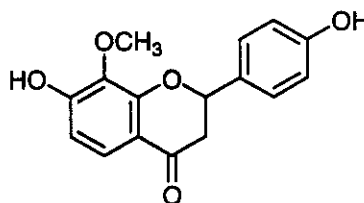
[基原] *Helianthus annuus*

[性状] ガム

[比旋光度]:  $[\alpha]_D^{25} +1.2$  (c, 0.1 in  $CHCl_3$ )

UV: [neutral]  $\lambda_{max}$  275 ; 325 (MeOH)

[その他のデータ] 絶対構造は暫定的



-----文献-----

Macias, F.A. et al., *Phytochemistry*, 1997, 45, 683, (Heliannones)

§ 4',7,8-Trihydroxyflavanone; (S)-form, 7,8-Di-Me ether

[化学名・別名] 4'-Hydroxy-7,8-dimethoxyflavanone. Heliannone B

[化合物分類] フラボノイド (Flavanones; 3 × O-置換基)

[構造式]

[分子式]  $C_{17}H_{16}O_5$

[分子量] 300.31

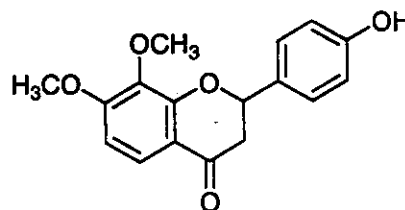
[基原] *Helianthus annuus*

[性状] ガム

[比旋光度]:  $[\alpha]_D^{25} +11.2$  (c, 0.1 in  $CHCl_3$ )

UV: [neutral]  $\lambda_{max}$  282 ; 324 (sh) (MeOH)

[その他のデータ] 絶対構造は暫定的



-----文献-----

Macias, F.A. et al., *Phytochemistry*, 1997, 45, 683, (Heliannones)

Rao, Y.K., *J. Nat. Prod.*, 2001, 64, 368-369, (Heliannone B, synth)

§ 1,4,8-Trihydroxy-13-nor-1,3,5,9-bisabolatetraen-11-one

[化学名・別名] Helinorbisabone

[CAS No.] 201288-95-1

[化合物分類] テルペノイド (Bisabolane sesquiterpenoids)

[構造式]

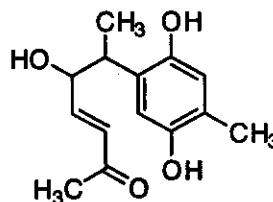
[分子式]  $C_{14}H_{18}O_4$

[分子量] 250.294

[基原] *Helianthus annuus*

[性状] 黄色のオイル

[比旋光度]:  $[\alpha]_D^{25} +3$  (c, 0.1 in  $CHCl_3$ )



-----文献-----

Marcias, F.A. et al., *Phytochemistry*, 1998, 48, 631-636, (分離, H-NMR, C13-NMR)

§ 8,10,15-Trihydroxy-3-oxo-1,4,11(13)-germacatrien-12,6-olide; (1E,4Z,6 $\alpha$ ,8 $\beta$ ,10 $\alpha$ )-form,

### 8-Angeloyl

[CAS No.] 84588-88-5

[その他の CAS No.] 103188-56-3

[化合物分類] テルペノイド (Elemene sesquiterpenoids)

[構造式]

[分子式]  $C_{20}H_{24}O_7$

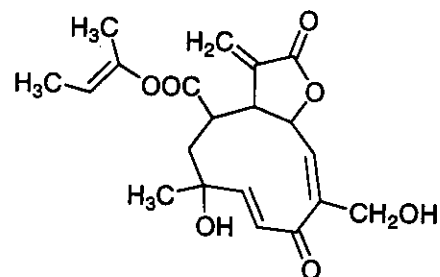
[分子量] 376.405

[基原] *Helianthus annuus*

[溶解性] BERDY SOL: メタノール, クロロホルムに可溶; 水, ヘキサンに難溶

UV: [neutral]  $\lambda_{max}$  215 ( $\epsilon$  25200); 250 (sh) ( $\epsilon$  14700) (EtOH)

[neutral]  $\lambda_{max}$  250 ( $\epsilon$  14700) (MeOH) (Berdy)



-----文献-----

Spring, O. et al., *Phytochemistry*, 1982, 21, 2551-2553, (分離, H-NMR, C13-NMR, UV)

Buschmann, H. et al., *Phytochemistry*, 1995, 39, 367, (分離, H-NMR)

### § 2,3,4-Trimethylhexane

[CAS No.] 921-47-1

[関連 CAS No.] 24418-02-8, 24418-03-9

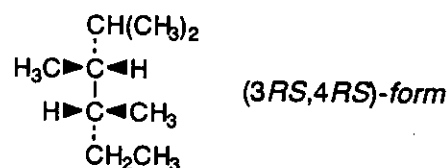
[化合物分類] 脂肪族化合物 (Branched aliphatic hydrocarbons)

[構造式]

[分子式]  $C_9H_{20}$

[分子量] 128.257

[基原] 次の植物の花から分離: *Helianthus annuus*, *Paulownia* spp.



-----文献-----

Pham-Delegue, M.H. et al., *J. Chem. Ecol.*, 1989, 15, 329, (分離)

Yaws, C.L. et al., *Hydrocarbon Process. Int. Ed.*, 1990, 69, 87

### § 10,12-Tritriacontanedione

[化合物分類] 脂肪族化合物 (Saturated unbranched aldehydes and ketones)

[構造式]  $H_3C(CH_2)_{20}COCH_2CO(CH_2)_8CH_3$

[分子式]  $C_{33}H_{64}O_2$

[分子量] 492.867

[基原] *Helianthus annuus* の花粉

-----文献-----

Schultz, S. et al., *Phytochemistry*, 2000, 54, 325-336

\*\*\*\*\*ヒメハギ (Himehagi) \*\*\*\*\*

§ § ヒメハギ科ヒメハギ (*Polygala japonica* Houttuyn) の根。

§ Astragalin; 6'-O-(4-Carboxy-3-hydroxy-3-methylbutanoyl)

[化学名・別名] Kaempferol 3-[6-O-(3-hydroxy-3-methylglutaroyl) glucoside]

[CAS No.] 157407-84-6

[化合物分類] フラボノイド (Flavonols; 4 × O-置換基)

[構造式]

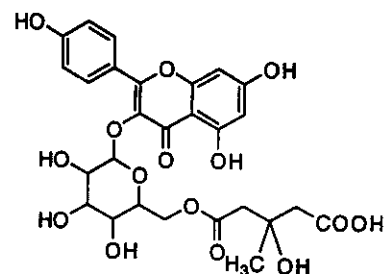
[分子式]  $C_{27}H_{26}O_{15}$

[分子量] 592.509

[基原] *Polygala japonica* の葉, *Citrus aurantifolia* の 10 年前のカルス培養物

[性状] 黄色の粉末 (MeOH)

[融点] Mp 210-213 °C



-----文献-----

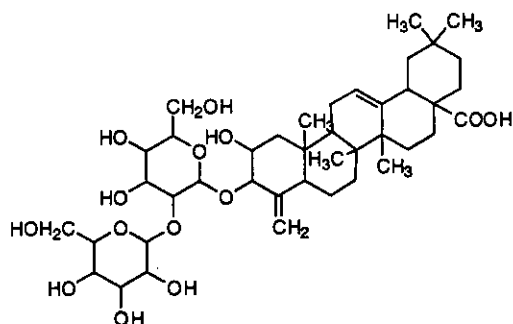
The Flavonoids: Advances in Research since 1980, (Ed. Harborne, J.B.), Chapman and Hall, London, 1988  
Berkow, M.A. et al., *Phytochemistry*, 1994, 36, 1225-1227, (3-hydroxy-3-methylglutarates)

§ 2,3-Dihydroxy-24-nor-4(23),12-oleanadien-28-oic acid; (2β,3β)-form, 3-O-β-D-Glucopyranosyl-(1→2)-β-D-glucopyranoside]

[化学名・別名] Polygalasaponin XXVII

[CAS No.] 173933-39-6

[化合物分類] テルペノイド (Nor-, seco- and abeooleanane triterpenoids)



[構造式]

[分子式] C<sub>41</sub>H<sub>64</sub>O<sub>14</sub>

[分子量] 780.948

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>25</sup> +47.6 (c, 1.2 in MeOH)

----- 文献 -----

Zhang, D. et al., Chem. Pharm. Bull., 1996, 44, 173, (分離, H-NMR, C13-NMR)

Lai, Z. et al., CA, 1997, 126, 297528w, (分離)

§ 2,3-Dihydroxy-12-oleanene-23,28-dioic acid; (2α,3β)-form, 2-Ketone

[化学名・別名] 3-Hydroxy-2-oxo-12-oleanene-23,28-dioic acid

[化合物分類] テルペノイド (Oleanane triterpenoids)

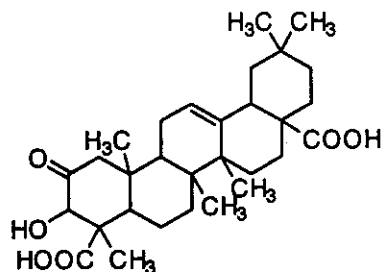
[構造式]

[分子式] C<sub>30</sub>H<sub>44</sub>O<sub>6</sub>

[分子量] 500.674

[基原] 次の植物から得られるサポゲニン: *Polygala japonica*

[比旋光度]: [α]<sub>D</sub><sup>20</sup> +76.1 (c, 1 in MeOH)



----- 文献 -----

Anantaraman, R. et al., J.C.S., 1956, 4369

Morris, R.J. et al., J.O.C., 1961, 26, 1241; 1963, 28, 240, (配糖体)

Eade, R.A. et al., Aust. J. Chem., 1963, 16, 900, (分離, 構造決定)

Anjaneyulu, A.S.R. et al., J. Indian Chem. Soc., 1978, 55, 1169, (分離, 誘導体)

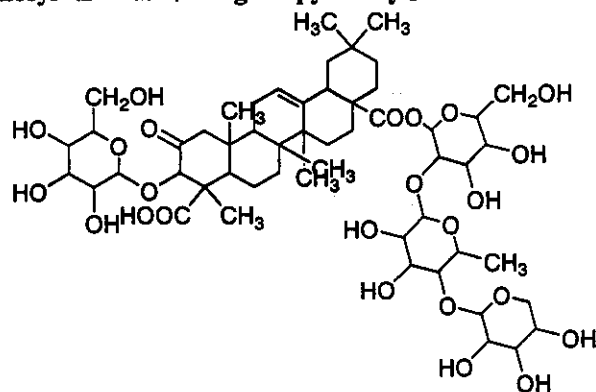
§ 2,3-Dihydroxy-12-oleanene-23,28-dioic acid; (2α,3β)-form, 2-Ketone, 3-O-β-D-glucopyranoside, 28-O-β-D-xylopyranosyl-(1→4)-α-L-rhamnopyranosyl-(1→2)-β-D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin XXIII

[CAS No.] 173933-38-5

[化合物分類] テルペノイド (Oleanane triterpenoids)

[構造式]



[分子式] C<sub>53</sub>H<sub>82</sub>O<sub>24</sub>

[分子量] 1103.216

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>20</sup> +20.6 (c, 0.85 in Py)

----- 文献 -----

Zhang, P. et al., Chem. Pharm. Bull., 1996, 44, 173, (Polygalasaponin XXIII)

§ 2,3-Dihydroxy-12-oleanene-23,28-dioic acid; (2β,3β)-form, 3-O-β-D-Glucopyranoside, 28-O-β-D-xylopyranosyl-(1→4)-α-L-rhamnopyranosyl-(1→2)-β-D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin XXI

[CAS No.] 173933-36-3  
[化合物分類] テルペノイド  
(Oleanane triterpenoids)

[構造式]

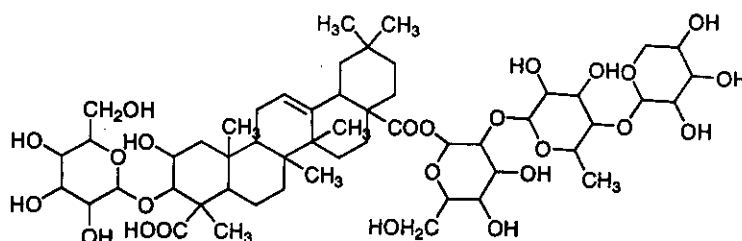
[分子式]  $C_{55}H_{84}O_{24}$

[分子量] 1105.232

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{21} +31.3$  (c, 0.78 in Py)



----- 文献 -----

Morris, R.J. et al., J.O.C., 1961, 26, 1241; 1963, 28, 240, (配糖体)

Gestetner, B., Phytochemistry, 1971, 10, 2221, (triglucoside)

Zhang, P. et al., Chem. Pharm. Bull., 1996, 44, 173, (Polygalasaponin XXIII)

§ 2,3-Dihydroxy-12-oleanene-23,28-dioic acid; (2  $\beta$ ,3  $\beta$ )-form, 3-O- $\beta$ -D-Glucopyranoside, 28-O-[ $\beta$ -D-xylopyranosyl-(1  $\rightarrow$  4)- $\alpha$ -L-rhamnopyranosyl-(1  $\rightarrow$  2)-[ $\beta$ -D-apiofuranosyl-(1  $\rightarrow$  3)]- $\beta$ -D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin XXII

[CAS No.] 173933-37-4

[化合物分類] テルペノイド

(Oleanane triterpenoids)

[構造式]

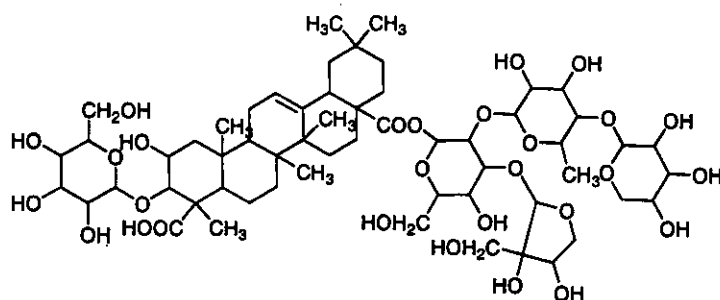
[分子式]  $C_{55}H_{82}O_{28}$

[分子量] 1237.348

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{20} -1.1$  (c, 0.92 in Py)



----- 文献 -----

Morris, R.J. et al., J.O.C., 1961, 26, 1241; 1963, 28, 240, (配糖体)

Eade, R.A. et al., Aust. J. Chem., 1963, 16, 900, (分離, 構造決定)

Zhang, P. et al., Chem. Pharm. Bull., 1996, 44, 173, (Polygalasaponin XXIII)

§ 2,3-Dihydroxy-12-oleanen-28-oic acid; (2  $\beta$ ,3  $\beta$ )-form, 3-O-[ $\beta$ -D-Glucopyranosyl-(1  $\rightarrow$  2)- $\beta$ -D-glucopyranoside]

[化学名・別名] Polygalasaponin XX

[CAS No.] 173938-31-3

[化合物分類] テルペノイド (Oleanane triterpenoids)

[構造式]

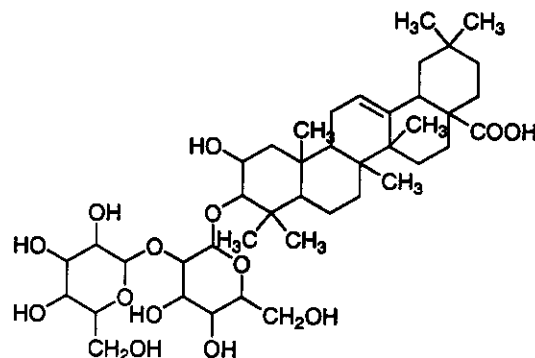
[分子式]  $C_{42}H_{66}O_{14}$

[分子量] 796.991

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{20} +33.5$  (c, 1 in Py)



----- 文献 -----

Zhang, D. et al., Chem. Pharm. Bull., 1996, 44, 173, (Polygalasaponin XX)

§ 2,3-Dihydroxy-23-oxo-12-oleanen-28-oic acid; (2  $\beta$ ,3  $\beta$ )-form

[化学名・別名] Oleragenin. 2  $\beta$ -Hydroxygypsogenin

[CAS No.] 168570-34-1

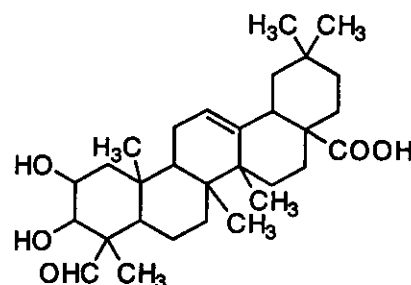
[化合物分類] テルペノイド (Oleanane triterpenoids)

[構造式]

[分子式]  $C_{30}H_{46}O_5$

[分子量] 486.69

[基原] Genin from *Polygala japonica*



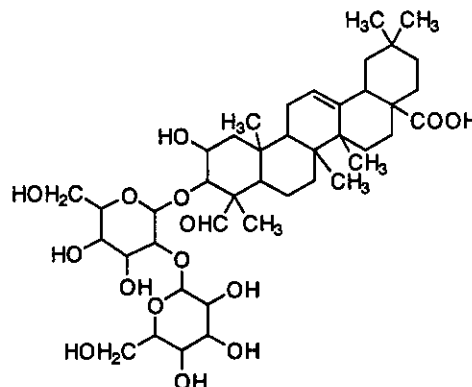
[性状] 針状結晶 (MeOH)  
[融点] Mp 296-298 °C で分解  
[比旋光度]:  $[\alpha]_D^{25} +67.8$  (c, 0.59 in MeOH)

----- 文献 -----

Mithöfer, A. et al., Nat. Prod. Lett., 1999, 14, 5-10, (Oleragenoside)

§ 2,3-Dihydroxy-23-oxo-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $[\beta$ -D-Glucopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranoside]

[化学名・別名] Polygalasaponin XIII  
[化合物分類] テルペノイド (Oleanane triterpenoids)  
[構造式]



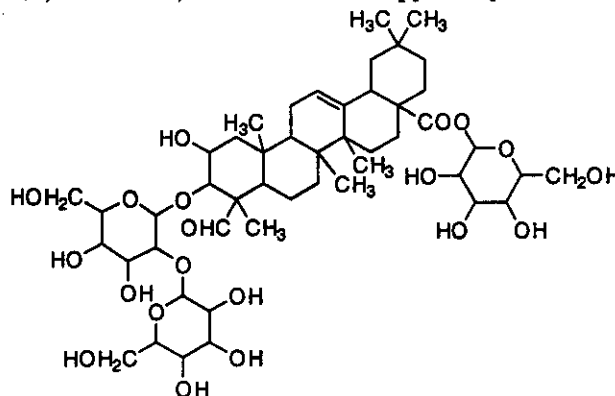
[分子式] C<sub>42</sub>H<sub>66</sub>O<sub>15</sub>  
[分子量] 810.974  
[基原] *Polygala japonica*  
[性状] 無定型の粉末  
[比旋光度]:  $[\alpha]_D^{25} +69.6$  (c, 0.97 in MeOH)

----- 文献 -----

Maeda, C. et al., Phytochemistry, 1994, 37, 1131, (分離, H-NMR, C13-NMR)  
Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 966, (分離, H-NMR, C13-NMR)

§ 2,3-Dihydroxy-23-oxo-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $[\beta$ -D-Glucopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranoside],  $\beta$ -D-glucopyranosyl ester

[化学名・別名] Polygalasaponin XIV  
[化合物分類] テルペノイド  
(Oleanane triterpenoids)  
[構造式]



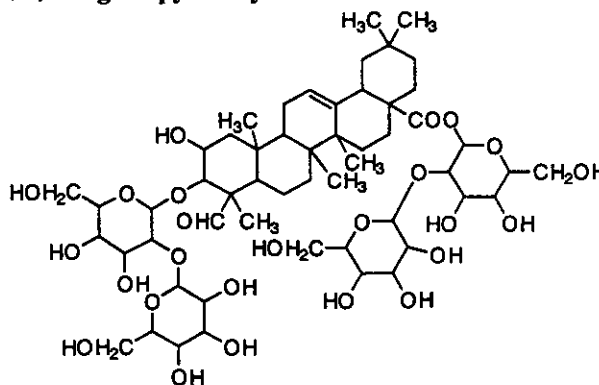
[分子式] C<sub>44</sub>H<sub>76</sub>O<sub>20</sub>  
[分子量] 973.116  
[基原] *Polygala japonica*  
[性状] 無定型の粉末  
[比旋光度]:  $[\alpha]_D^{25} +48.6$  (c, 1.1 in MeOH)

----- 文献 -----

Maeda, C. et al., Phytochemistry, 1994, 37, 1131, (分離, H-NMR, C13-NMR)  
Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 966, (分離, H-NMR, C13-NMR)

§ 2,3-Dihydroxy-23-oxo-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $[\beta$ -D-Glucopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranoside],  $[\beta$ -D-glucopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin XV  
[化合物分類] テルペノイド  
(Oleanane triterpenoids)  
[構造式]



[分子式] C<sub>54</sub>H<sub>86</sub>O<sub>25</sub>  
[分子量] 1135.258  
[基原] *Polygala japonica*  
[性状] 無定型の粉末  
[比旋光度]:  $[\alpha]_D^{25} +15.5$  (c, 1.1 in Py)

----- 文献 -----

Maeda, C. et al., Phytochemistry, 1994, 37, 1131, (分離, H-NMR, C13-NMR)  
Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 966, (分離, H-NMR, C13-NMR)

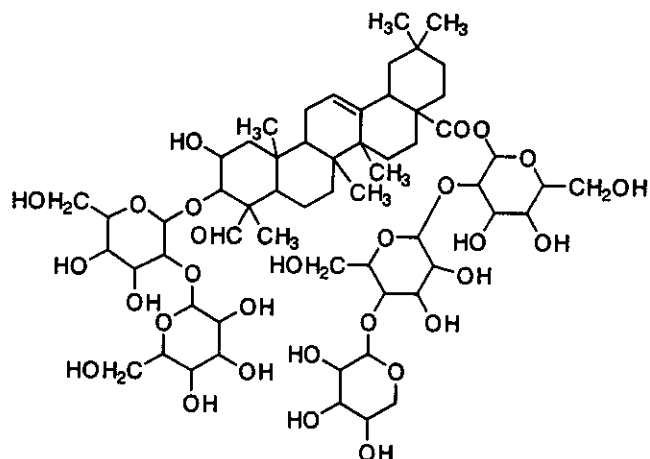
§ 2,3-Dihydroxy-23-oxo-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O-[\beta-D-Glucopyranosyl-(1 $\rightarrow$ 2)-\beta-D-glucopyranoside], [\beta-D-xylopyranosyl-(1 $\rightarrow$ 4)-\beta-D-glucopyranosyl-(1 $\rightarrow$ 2)-\beta-D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin XVI

[化合物分類] テルペノイド

(Oleanane triterpenoids)

[構造式]



[分子式] C<sub>39</sub>H<sub>54</sub>O<sub>29</sub>

[分子量] 1267.374

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>24</sup> +31.9 (c, 0.83 in MeOH)

-----文献-----

Maeda, C. et al., *Phytochemistry*, 1994, 37, 1131, (分離, H-NMR, C13-NMR)

Zhang, D. et al., *Chem. Pharm. Bull.*, 1995, 43, 966, (分離, H-NMR, C13-NMR)

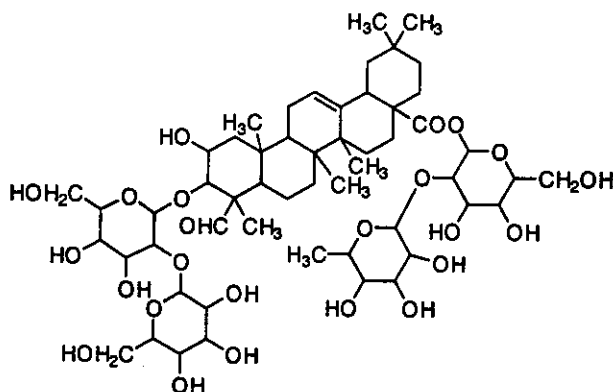
Mithöfer, A. et al., *Nat. Prod. Lett.*, 1999, 14, 5-10, (Oleragenoside)

§ 2,3-Dihydroxy-23-oxo-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O-[\beta-D-Glucopyranosyl-(1 $\rightarrow$ 2)-\beta-D-glucopyranoside], [\alpha-L-rhamnopyranosyl-(1 $\rightarrow$ 2)-\beta-D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin XVII

[化合物分類] テルペノイド (Oleanane triterpenoids)

[構造式]



[分子式] C<sub>34</sub>H<sub>46</sub>O<sub>24</sub>

[分子量] 1119.259

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>24</sup> +12 (c, 0.5 in MeOH)

-----文献-----

Maeda, C. et al., *Phytochemistry*, 1994, 37, 1131, (分離, H-NMR, C13-NMR)

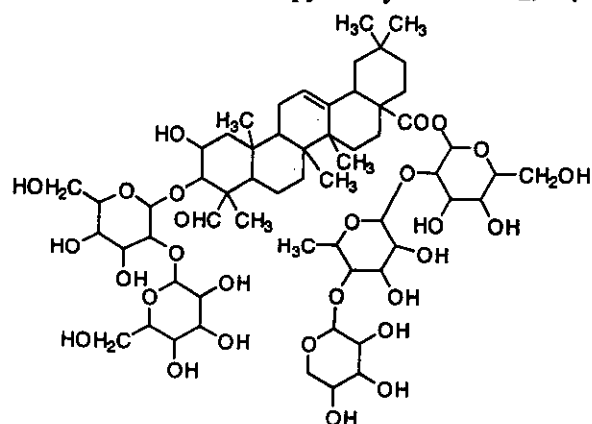
Zhang, D. et al., *Chem. Pharm. Bull.*, 1995, 43, 966, (分離, H-NMR, C13-NMR)

§ 2,3-Dihydroxy-23-oxo-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O-[\beta-D-Glucopyranosyl-(1 $\rightarrow$ 2)-\beta-D-glucopyranoside], [\beta-D-xylopyranosyl-(1 $\rightarrow$ 4)-\alpha-L-rhamnopyranosyl-(1 $\rightarrow$ 2)-\beta-D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin XVIII

[化合物分類] テルペノイド (Oleanane triterpenoids)

[構造式]



[分子式] C<sub>39</sub>H<sub>54</sub>O<sub>28</sub>

[分子量] 1251.375

[基原] *Polygala japonica*

[性状] 無定型の粉末

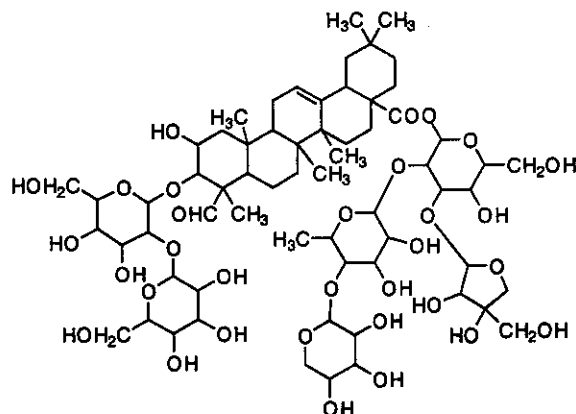
[比旋光度]: [α]<sub>D</sub><sup>24</sup> +0.8 (c, 1.19 in Py)

-----文献-----

Maeda, C. et al., *Phytochemistry*, 1994, 37, 1131, (分離, H-NMR, C13-NMR)  
Zhang, D. et al., *Chem. Pharm. Bull.*, 1995, 43, 966, (分離, H-NMR, C13-NMR)

§ 2,3-Dihydroxy-23-oxo-12-oleanen-28-oic acid; (2  $\beta$ , 3  $\beta$ )-form, 3-O- $[\beta$ -D-Glucopyranosyl-(1  $\rightarrow$  2)- $\beta$ -D-glucopyranoside],  $[\beta$ -D-xylopyranosyl-(1  $\rightarrow$  4)- $\alpha$ -L-rhamnopyranosyl-(1  $\rightarrow$  2)- $[\beta$ -D-apiofuranosyl-(1  $\rightarrow$  3)]- $\beta$ -D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin XIX  
[化合物分類] テルペノイド (Oleanane triterpenoids)  
[構造式]



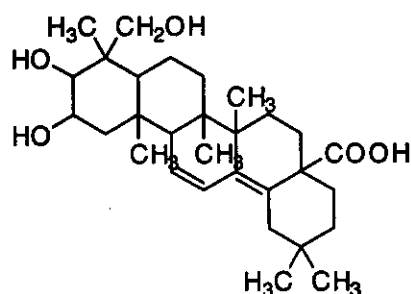
[分子式]  $C_{64}H_{102}O_{32}$   
[分子量] 1383.491  
[基原] *Polygala japonica*  
[性状] 無定型の粉末  
[比旋光度]:  $[\alpha]_D^{24} -10.6$  (c, 0.71 in Py)

----- 文献 -----

Maeda, C. et al., *Phytochemistry*, 1994, 37, 1131, (分離, H-NMR, C13-NMR)  
Zhang, D. et al., *Chem. Pharm. Bull.*, 1995, 43, 966, (分離, H-NMR, C13-NMR)

§ 2,3,23-Trihydroxy-11,13(18)-oleanadien-28-oic acid; (2  $\beta$ , 3  $\beta$ )-form

[化合物分類] テルペノイド (Oleanane triterpenoids)  
[構造式]



[分子式]  $C_{30}H_{46}O_5$   
[分子量] 486.69  
[基原] 次の植物から得られるサボゲニン: *Polygala japonica*  
[比旋光度]:  $[\alpha]_D^{20} -89.6$  (c, 0.31 in MeOH)

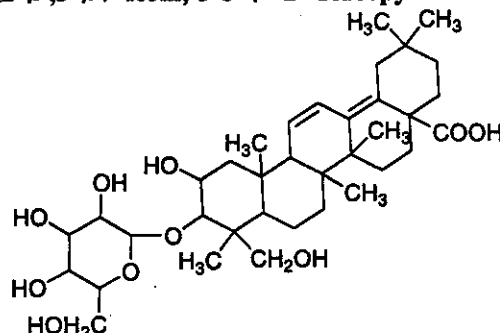
----- 文献 -----

Zhang, D. et al., *Chem. Pharm. Bull.*, 1996, 44, 173, (分離, H-NMR, C13-NMR)

§ 2,3,23-Trihydroxy-11,13(18)-oleanadien-28-oic acid; (2  $\beta$ , 3  $\beta$ )-form, 3-O- $\beta$ -D-Glucopyranoside

[化学名・別名] Polygalasaponin XXV  
[CAS No.] 173938-32-4  
[化合物分類] テルペノイド (Oleanane triterpenoids)  
[構造式]

[分子式]  $C_{36}H_{56}O_{10}$   
[分子量] 648.832  
[基原] *Polygala japonica*  
[性状] 無定型の粉末  
[比旋光度]:  $[\alpha]_D^{21} -70.6$  (c, 0.86 in Py)



----- 文献 -----

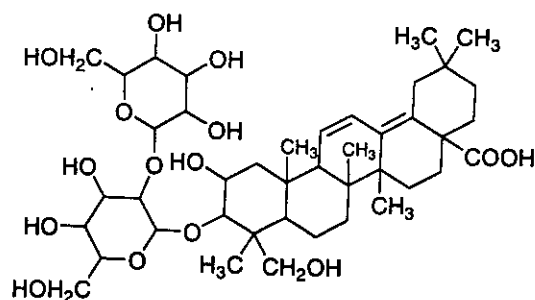
Zhang, D. et al., *Chem. Pharm. Bull.*, 1996, 44, 173, (分離, H-NMR, C13-NMR)

§ 2,3,23-Trihydroxy-11,13(18)-oleanadien-28-oic acid; (2  $\beta$ , 3  $\beta$ )-form, 3-O- $[\beta$ -D-Glucopyranosyl-(1  $\rightarrow$  2)- $\beta$ -D-glucopyranoside]

[化学名・別名] Polygalasaponin XXVI  
[CAS No.] 173938-33-5  
[化合物分類] テルペノイド (Oleanane triterpenoids)  
[構造式]



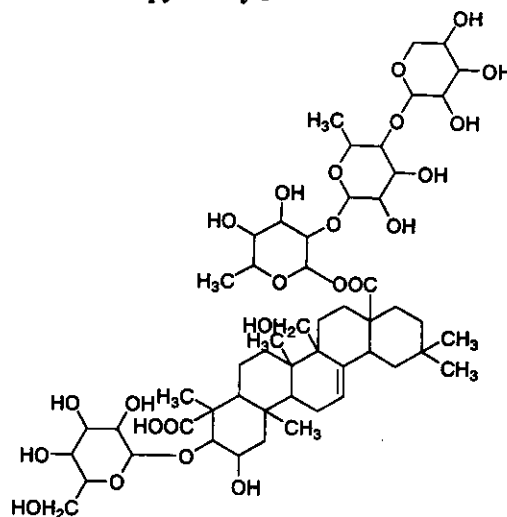
[分子式]  $C_{42}H_{66}O_{15}$   
 [分子量] 810.974  
 [基原] *Polygala japonica*  
 [性状] 無定型の粉末  
 [比旋光度]:  $[\alpha]_D^{20} +52.1$  (c, 0.98 in Py)



文献

Zhang, D. et al., Chem. Pharm. Bull., 1996, 44, 173, (分離, H-NMR, C13-NMR)

§ 2,3,27-Trihydroxy-12-oleanene-23,28-dioic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $\beta$ -D-Glucopyranoside, 28-O- $[\beta$ -D-xylopyranosyl-(1 $\rightarrow$ 4)- $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-fucopyranosyl] ester  
 [化学名・別名] Polygalasaponin XXVIII  
 [CAS No.] 176182-01-7  
 [化合物分類] テルペノイド (Oleanane triterpenoids)  
 [構造式]

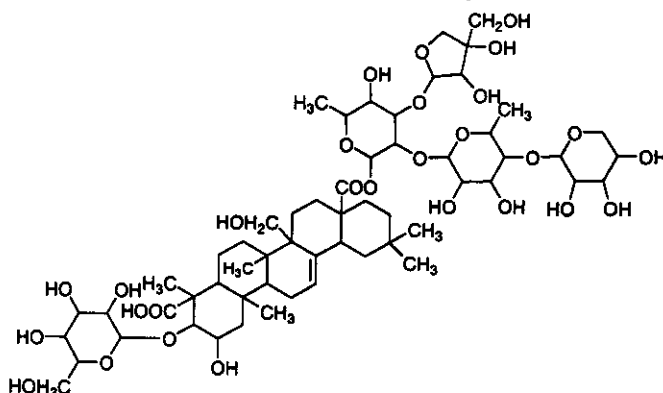


[分子式]  $C_{55}H_{84}O_{24}$   
 [分子量] 1105.232  
 [基原] *Polygala japonica*  
 [性状] 無定型の粉末  
 [比旋光度]:  $[\alpha]_D^{30} -1$  (c, 0.52 in MeOH)

文献

Zhang, D. et al., Chem. Pharm. Bull., 1996, 44, 173-179; 810-815; 2092-2099, (Polygalasaponins)

§ 2,3,27-Trihydroxy-12-oleanene-23,28-dioic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $\beta$ -D-Glucopyranoside, 28-O- $[\beta$ -D-xylopyranosyl-(1 $\rightarrow$ 4)- $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)- $[\beta$ -D-apiofuranosyl-(1 $\rightarrow$ 3)]- $\beta$ -D-fucopyranosyl] ester  
 [化学名・別名] Polygalasaponin XXIV  
 [CAS No.] 173967-53-8  
 [化合物分類] テルペノイド (Oleanane triterpenoids)  
 [構造式]



[分子式]  $C_{58}H_{92}O_{29}$   
 [分子量] 1253.347  
 [基原] *Polygala japonica*  
 [性状] 無定型の粉末  
 [比旋光度]:  $[\alpha]_D^{20} +1.1$  (c, 0.92 in Py)

文献

Zhang, D. et al., Chem. Pharm. Bull., 1996, 44, 173-179; 810-815; 2092-2099, (Polygalasaponins)

§ 2,3,27-Trihydroxy-12-oleanene-23,28-dioic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $\beta$ -D-Glucopyranoside, 28- $[\beta$ -D-apiofuranosyl-(1 $\rightarrow$ 3)- $[\alpha$ -L-arabinopyranosyl-(1 $\rightarrow$ 3)- $\beta$ -D-xylopyranosyl-(1 $\rightarrow$ 4)]- $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)- $[(\rightarrow$ 4)-(3,4,5-trimethoxycinnamoyl)]-6-deoxy- $\beta$ -D-galactopyranosyl] ester  
 [化学名・別名] Onjisaponin F.  
 Polygalasaponin XXXI  
 [CAS No.] 79103-90-5

[化合物分類]テルペノイド (Oleanane triterpenoids)

[構造式]

[分子式]  $C_{75}H_{112}O_{36}$

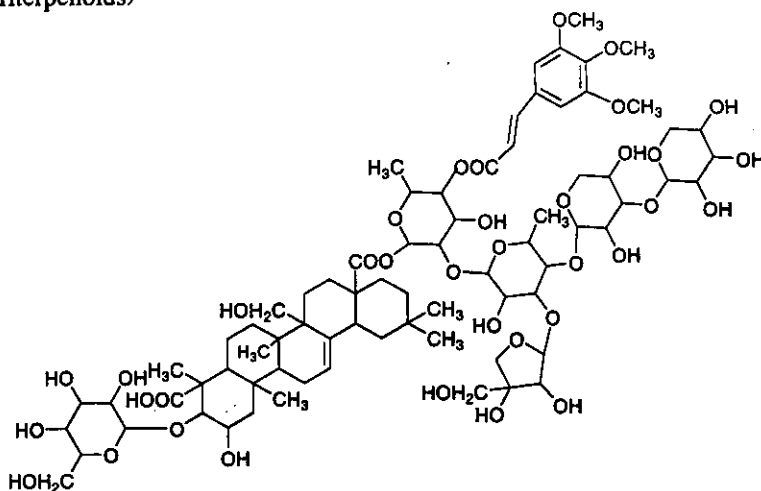
[分子量] 1589.688

[基原] 次の植物から分離: *Polygala tenuifolia*, *Polygala japonica*

[性状] 粉末 (EtOH)

[融点] Mp 246-249 °C (分解)

[比旋光度]:  $[\alpha]_D^{17}$  -10.7 (c, 1.15 in MeOH).  $[\alpha]_D^{30}$  -12 (c, 0.25 in MeOH)



----- 文献 -----

Zhang, D. et al., Chem. Pharm. Bull., 1996, 44, 173-179; 810-815; 2092-2099, (Polygalasaponins)

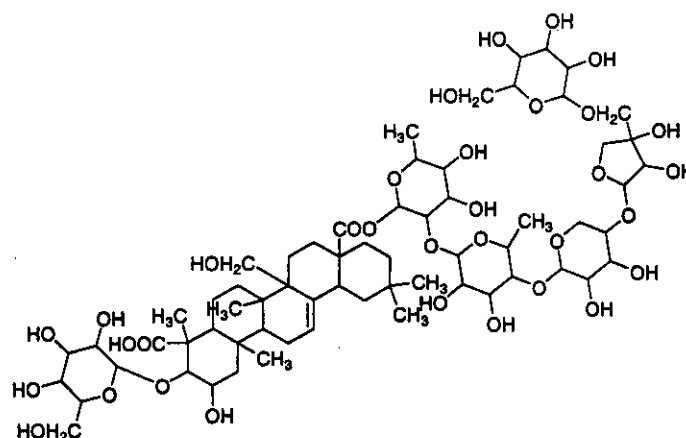
§ 2,3,27-Trihydroxy-12-oleanene-23,28-dioic acid; (2β,3β)-form, 3-O-β-D-Glucopyranoside, 28-O-β-D-galactopyranosyl-(1→5)-β-D-apiofuranosyl-(1→4)-β-D-xylopyranosyl-(1→4)-α-L-rhamnopyranosyl-(1→2)-β-D-fucopyranosyl] ester

[化学名・別名] Polygalasaponin XXIX

[CAS No.] 176182-02-8

[化合物分類]テルペノイド (Oleanane triterpenoids)

[構造式]



[分子式]  $C_{64}H_{102}O_{33}$

[分子量] 1399.49

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{25}$  -11.2 (c, 2.8 in MeOH)

----- 文献 -----

Zhang, D. et al., Chem. Pharm. Bull., 1996, 44, 173-179; 810-815; 2092-2099, (Polygalasaponins)

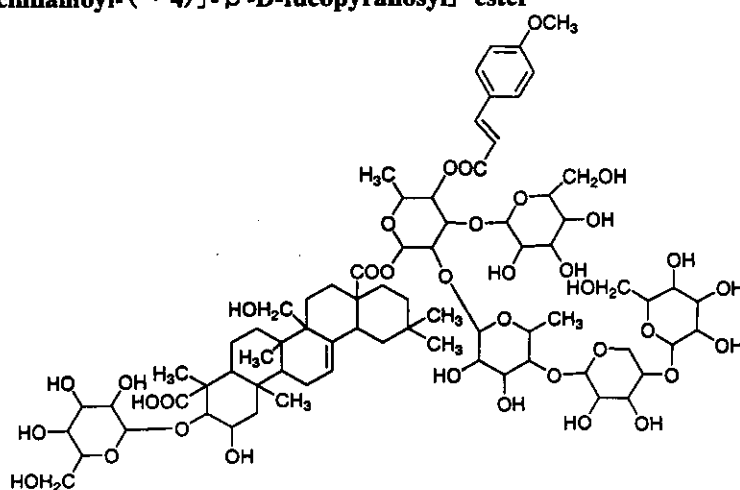
§ 2,3,27-Trihydroxy-12-oleanene-23,28-dioic acid; (2β,3β)-form, 3-O-β-D-Glucopyranoside, 28-O-β-D-galactopyranosyl-(1→4)-β-D-xylopyranosyl-(1→4)-α-L-rhamnopyranosyl-(1→2)-β-D-fucopyranosyl-[4-methoxycinnamoyl-(→4)]-β-D-fucopyranosyl] ester

[化学名・別名] Polygalasaponin XXX

[CAS No.] 176182-03-9

[化合物分類]テルペノイド (Oleanane triterpenoids)

[構造式]



[分子式]  $C_{75}H_{112}O_{36}$

[分子量] 1589.688

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]: $[\alpha]_D^{30} -1.1$  (c, 0.46 in MeOH)

-----文献-----

Zhang, D. et al., Chem. Pharm. Bull., 1996, 44, 173-179; 810-815; 2092-2099, (Polygalasaponins)

§ 2,3,27-Trihydroxy-12-oleanene-23,28-dioic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $\beta$ -D-Glucopyranoside, 28-O- $[\alpha$ -L-arabinopyranosyl-(1 $\rightarrow$ 3)]- $\beta$ -D-xylopyranosyl-(1 $\rightarrow$ 4)- $[\beta$ -D-apiofuranosyl-(1 $\rightarrow$ 3)]- $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)- $[\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 3)]-[4-methoxycinnamoyl-( $\rightarrow$ 4)]- $\beta$ -D-fucopyranosyl] ester

[化学名・別名]

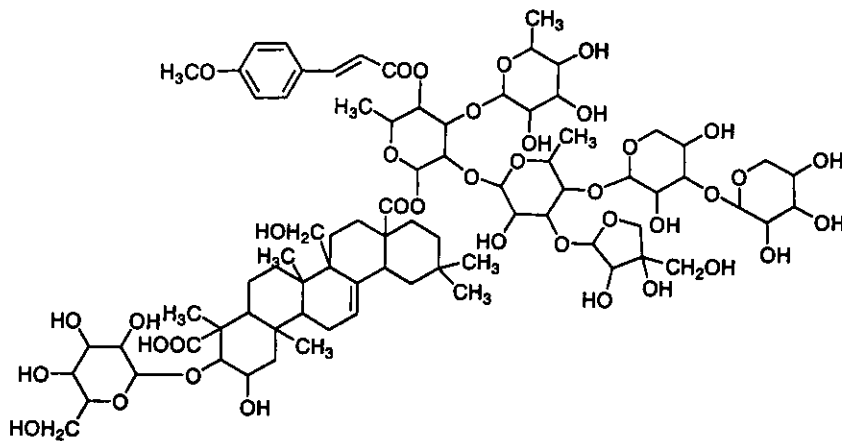
Polygalasaponin XXXII

[CAS No.]176182-04-0

[化合物分類]テルペノイド

(Oleanane triterpenoids)

[構造式]



[分子式] $C_{79}H_{118}O_{38}$

[分子量]1675.778

[基原]*Polygala japonica*

[性状]無定型の粉末

[比旋光度]: $[\alpha]_D^{26} -6.6$  (c, 0.48 in MeOH)

-----文献-----

Zhang, D. et al., Chem. Pharm. Bull., 1996, 44, 173-179; 810-815; 2092-2099, (Polygalasaponins)

§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\alpha$ ,3 $\beta$ )-form

[化学名・別名]Arjunolic acid

[CAS No.]465-00-9

[化合物分類]テルペノイド (Oleanane triterpenoids)

[構造式]

[分子式] $C_{30}H_{48}O_5$

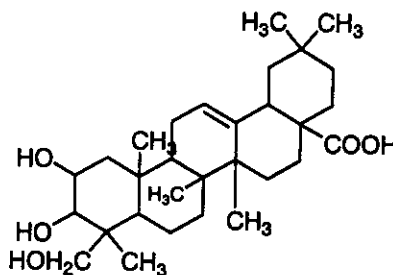
[分子量]488.706

[基原]*Terminalia arjuna*, *Tristania conferta*, *Prunella vulgaris*, *Polygala japonica*, *Metrosideros umbellata*, *Psidium guajava*, *Mitragyna ciliata*, その他

[性状]結晶 (Me<sub>2</sub>CO)

[融点]Mp 337-340 °C

[比旋光度]: $[\alpha]_D^{19} +63.5$  (c, 0.5 in EtOH)



-----文献-----

Araújo, F.W.L. et al., J. Nat. Prod., 1990, 53, 1436, (Arjunolic acid)

Liang, L. et al., Yaoxue Xuebao, 1993, 28, 836; CA, 120, 101999j, (Arjunolic acid 3-glucoside)

§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $\beta$ -D-Glucopyranoside,  $\beta$ -D-glucopyranosyl ester

[化学名・別名]Polygalasaponin I. Asterbatanocide C

[CAS No.]162901-83-9

[化合物分類]テルペノイド

(Oleanane triterpenoids)

[構造式]

[分子式] $C_{42}H_{68}O_{15}$

[分子量]812.99

[基原]*Aster batangensis*,

*Polygala japonica*

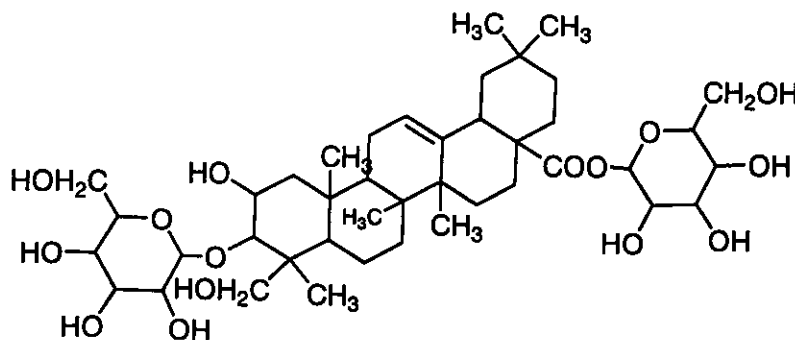
[性状]無定型の粉末

[融点]Mp 231-233 °C

[比旋光度]: $[\alpha]_D +29.18$  (c, 0.49 in

MeOH).  $[\alpha]_D^{27} +25.7$  (c, 1.07 in MeOH)

[その他のデータ]CAS stereochem. descriptor of Asterbatanocide C is defective. Erroneously assigned the



same registry number as Arjunolitin

文献

Shao, Y. et al., Nat. Prod. Lett., 1994, 5, 233, (Asterbatanosides)

Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 115; 996, (Polygalasaponins)

Shao, Y. et al., Phytochemistry, 1996, 41, 1593-1598, (Asterbatanoside B, Asterbatanoside C)

§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $\beta$ -D-Glucopyranoside, 28-O-[ $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin II

[CAS No.] 162857-62-7

[化合物分類] テルペノイド (Oleanane triterpenoids)

[構造式]

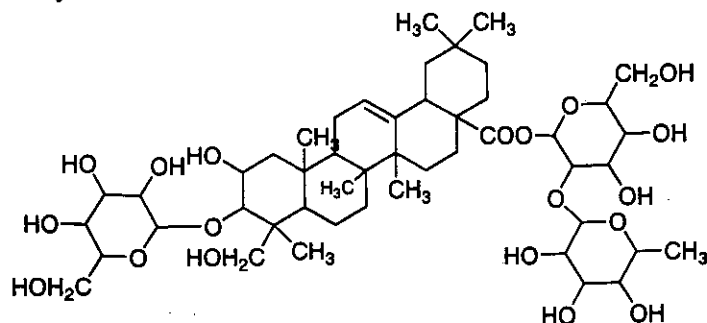
[分子式] C<sub>48</sub>H<sub>78</sub>O<sub>19</sub>

[分子量] 959.133

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{27}$  0 (c, 0.85 in MeOH)



文献

Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 115; 996, (Polygalasaponins)

§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $\beta$ -D-Glucopyranoside, 28-O-[ $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)-[ $\beta$ -D-apiofuranosyl-(1 $\rightarrow$ 3)]- $\beta$ -D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin III

[CAS No.] 162857-63-8

[化合物分類] テルペノイド (Oleanane triterpenoids)

[構造式]

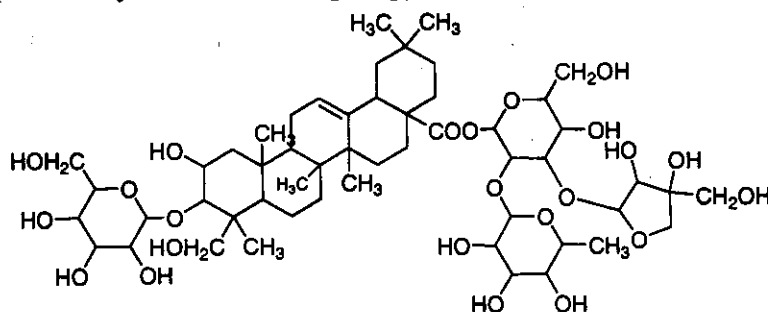
[分子式] C<sub>53</sub>H<sub>86</sub>O<sub>23</sub>

[分子量] 1091.249

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{27}$  -11.5 (c, 0.39 in MeOH)



文献

Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 115; 996, (Polygalasaponins)

§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $\beta$ -D-Glucopyranoside, 28-O-[ $\beta$ -D-xylopyranosyl-(1 $\rightarrow$ 4)- $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)-[ $\beta$ -D-apiofuranosyl-(1 $\rightarrow$ 3)]- $\beta$ -D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin IV

[CAS No.] 162857-64-9

[化合物分類] テルペノイド (Oleanane triterpenoids)

[構造式]

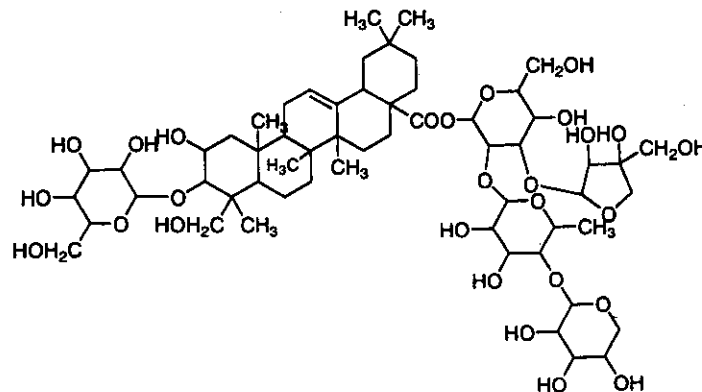
[分子式] C<sub>58</sub>H<sub>94</sub>O<sub>27</sub>

[分子量] 1223.364

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{27}$  -10.8 (c, 0.51 in MeOH)



文献

Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 115; 996, (Polygalasaponins)

§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O- $\beta$ -D-Glucopyranoside, 28-O-[ $\beta$ -D-xylopyranosyl-(1 $\rightarrow$ 4)-[ $\beta$ -D-apiofuranosyl-(1 $\rightarrow$ 3)]- $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranosyl] ester

**-D-glucopyranosyl] ester**

[化学名・別名] Polygalasaponin V

[CAS No.] 162857-65-0

[化合物分類] テルペノイド

(Oleanane triterpenoids)

[構造式]

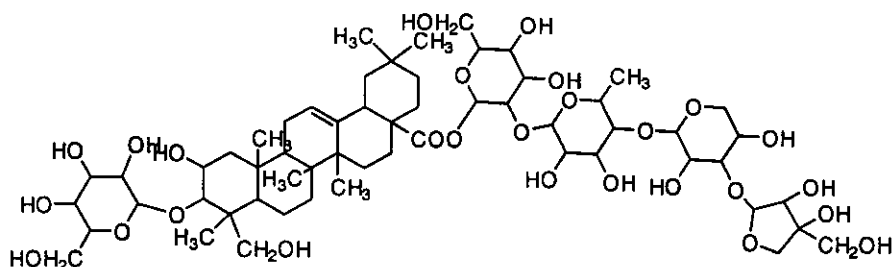
[分子式]  $C_{36}H_{94}O_{27}$

[分子量] 1223.364

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{27} -16.7$  (c, 0.48 in MeOH)



-----文献-----

Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 115; 996, (Polygalasaponins)

**§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O-[ $\beta$ -D-Glucopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranoside], 28-O- $\beta$ -D-glucopyranosyl ester**

[化学名・別名]

Polygalasaponin VI

[CAS No.] 162857-66-1

[化合物分類] テルペノイド

(Oleanane triterpenoids)

[構造式]

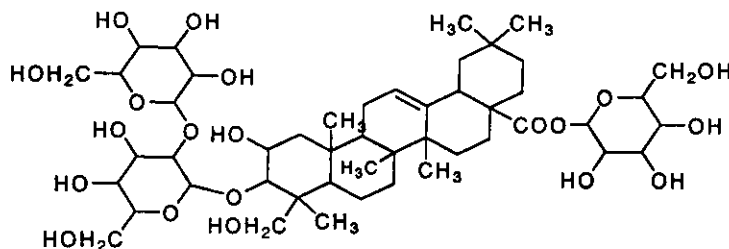
[分子式]  $C_{48}H_{76}O_{20}$

[分子量] 975.132

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{27} +28.3$  (c, 1.15 in MeOH)



-----文献-----

Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 115; 996, (Polygalasaponins)

**§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O-[ $\beta$ -D-Glucopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranoside], 28-O-[ $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranosyl] ester**

[化学名・別名] Polygalasaponin VII

[CAS No.] 162857-67-2

[化合物分類] テルペノイド

(Oleanane triterpenoids)

[構造式]

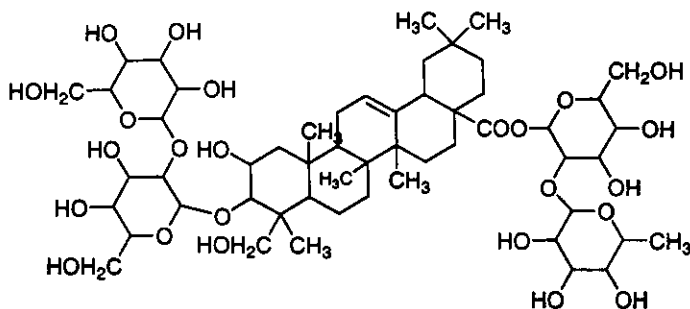
[分子式]  $C_{54}H_{88}O_{24}$

[分子量] 1121.275

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{27} +1.2$  (c, 0.84 in MeOH)



-----文献-----

Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 115; 996, (Polygalasaponins)

**§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O-[ $\beta$ -D-Glucopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranoside], 28-O-[ $\beta$ -D-apiofuranosyl-(1 $\rightarrow$ 3)-[ $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)]- $\beta$ -D-glucopyranosyl] ester**

[化学名・別名] Polygalasaponin VIII

[CAS No.] 162857-68-3

[化合物分類] テルペノイド

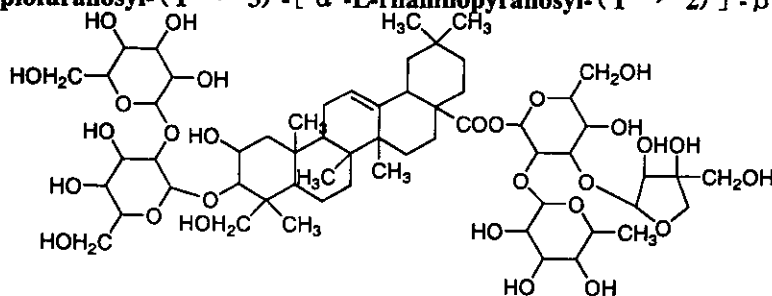
(Oleanane triterpenoids)

[構造式]

[分子式]  $C_{59}H_{96}O_{28}$

[分子量] 1253.391

[基原] *Polygala japonica*



[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{25} +10.6$  (c, 1.04 in Py)

文献

Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 115; 996, (Polygalasaponins)

§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O-[ $\beta$ -D-Glucopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranoside], 28-O-[ $\beta$ -D-xylopyranosyl-(1 $\rightarrow$ 4)- $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranosyl] ester

[化学名・別名]

Polygalasaponin IX

[CAS No.] 162857-69-4

[化合物分類] テルペノイド

(Oleanane triterpenoids)

[構造式]

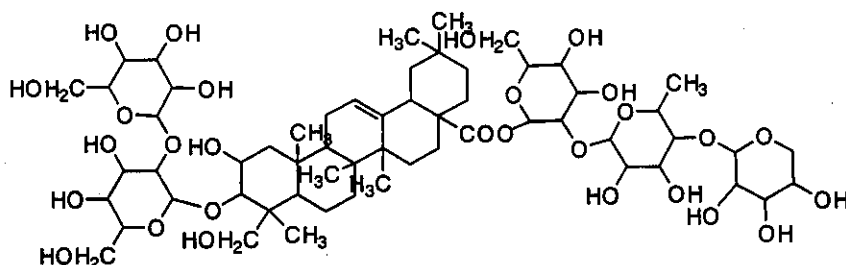
[分子式]  $C_{59}H_{96}O_{28}$

[分子量] 1253.391

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{27} -1.3$  (c, 0.38 in MeOH)



文献

Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 115; 996, (Polygalasaponins)

§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O-[ $\beta$ -D-Glucopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranoside], 28-O-[ $\beta$ -D-xylopyranosyl-(1 $\rightarrow$ 4)- $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-apiofuranosyl-(1 $\rightarrow$ 3)- $\beta$ -D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin X

[CAS No.] 162857-77-4

[化合物分類] テルペノイド

(Oleanane triterpenoids)

[構造式]

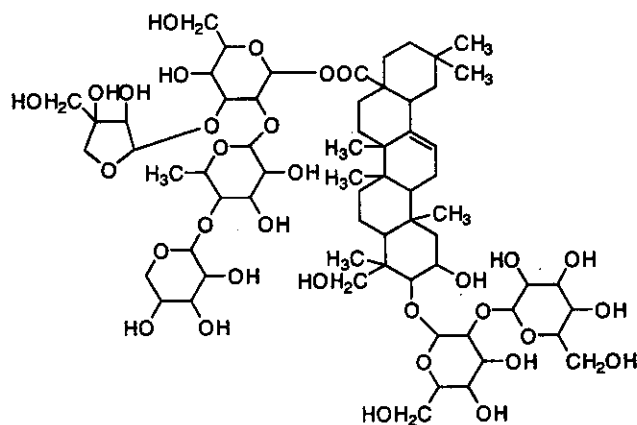
[分子式]  $C_{66}H_{104}O_{32}$

[分子量] 1385.506

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{25} +17.2$  (c, 0.32 in Py)



文献

Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 115; 996, (Polygalasaponins)

§ 2,3,23-Trihydroxy-12-oleanen-28-oic acid; (2 $\beta$ ,3 $\beta$ )-form, 3-O-[ $\beta$ -D-Glucopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranoside], 28-O-[ $\beta$ -D-glucopyranosyl-(1 $\rightarrow$ 2)- $\beta$ -D-glucopyranosyl] ester

[化学名・別名] Polygalasaponin XI

[CAS No.] 168570-26-1

[化合物分類] テルペノイド

(Oleanane triterpenoids)

[構造式]

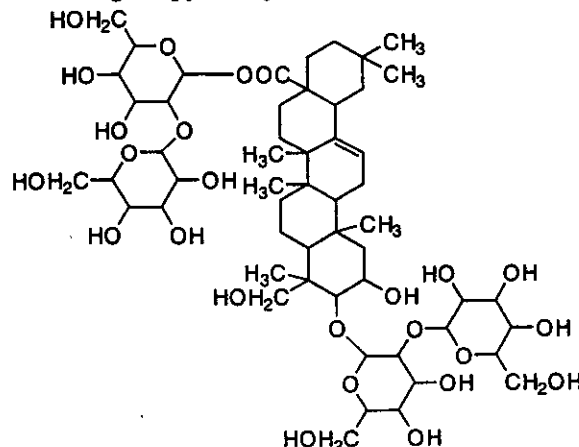
[分子式]  $C_{54}H_{88}O_{25}$

[分子量] 1137.274

[基原] *Polygala japonica*

[性状] 無定型の粉末

[比旋光度]:  $[\alpha]_D^{21} +30.6$  (c, 0.62 in MeOH)



-----文献-----

Zhang, D. et al., Chem. Pharm. Bull., 1995, 43, 115; 996, (Polygalasaponins)

§ 2,3,24-Trihydroxy-12-oleanen-28-oic acid; (2 $\alpha$ ,3 $\alpha$ )-form

[CAS No.] 88586-19-0

[化合物分類] テルペノイド (Oleanane triterpenoids)

[構造式]

[分子式] C<sub>30</sub>H<sub>48</sub>O<sub>5</sub>

[分子量] 488.706

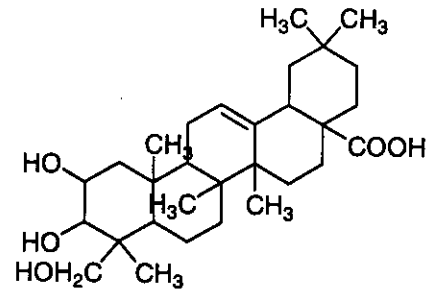
[基原] 次の植物から分離: *Polygala japonica*,

*Prunella vulgaris*

[性状] 結晶 (MeOH) (as Me ester)

[融点] Mp 280-282 °C (Me ester)

[比旋光度]: [α]<sub>D</sub><sup>27</sup> +59.6 (c, 1 in CHCl<sub>3</sub>) (Me ester)



-----文献-----

Kojima, H. et al., Phytochemistry, 1986, 25, 729; 1987, 26, 1107, (分離, 構造決定, C13-NMR)

Ngounou, F.N. et al., Phytochemistry, 1987, 26, 3080, (分離, 構造決定)

Yamagishi, T. et al., Phytochemistry, 1988, 27, 3213, (分離, 結晶構造)

Sashida, Y. et al., Phytochemistry, 1994, 35, 377, (分離, H-NMR, C13-NMR)

§ § ヒメハギ科イトヒメハギ (*Polygala tenuifolia* Willdenow) の根。

§ 1,5-Anhydroglucitol; D-form

[CAS No.] 154-58-5

[化合物分類] 炭水化物 (1,5-Anhydrosugars), 炭水化物 (Hexitols)

[構造式]

[分子式] C<sub>6</sub>H<sub>12</sub>O<sub>5</sub>

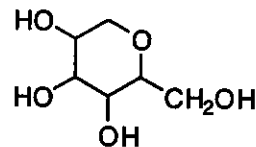
[分子量] 164.158

[基原] Occurs in *Polygala tenuifolia*, *Polygala vulgaris*, *Polygala amara*, *Polygala senega* and in human cerebrospinal fluid

[融点] Mp 142-143 °C

[比旋光度]: [α]<sub>D</sub><sup>20</sup> +42.3 (c, 0.84 in H<sub>2</sub>O)

[販売元] Sigma:A0511



-----文献-----

Wiggins, L.F., Adv. Carbohydr. Chem., 1950, 5, 191, (レビュー)

Elvebak, L.E. et al., Carbohydr. Res., 1995, 274, 85-97, (誘導體)

§ 1,5-Anhydroglucitol; D-form, 6-O-(3,4,5-Trimethoxycinnamoyl)

[化学名・別名] Tenuifoliside D

[CAS No.] 139726-38-8

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

炭水化物 (Hexitols), 炭水化物 (1,5-Anhydrosugars)

[構造式]

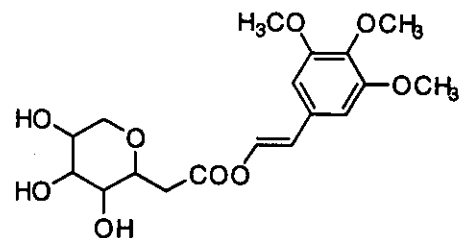
[分子式] C<sub>18</sub>H<sub>24</sub>O<sub>8</sub>

[分子量] 384.382

[基原] *Polygala tenuifolia* の根

[性状] 無定型の粉末

[比旋光度]: [α]<sub>D</sub><sup>24</sup> +24.6 (c, 1.66 in MeOH)



-----文献-----

Ikeya, Y. et al., Chem. Pharm. Bull., 1991, 39, 2600, (Tenuifoliside D)

§ β-Carboline-1-carboxylic acid; Butyl ester

[化学名・別名] 1-Butoxycarbonyl-β-carboline. 1-Carbobutoxy-β-carboline

[CAS No.] 153535-98-9

[化合物分類] アルカロイド化合物 (β-Carboline alkaloids)

[構造式]

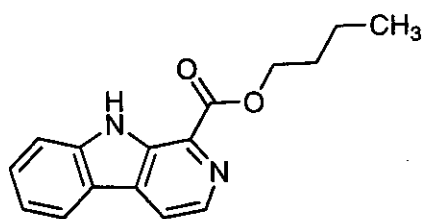
[分子式]  $C_{16}H_{16}N_2O_2$

[分子量] 268.315

[基原] 次の植物から得られるアルカロイド: *Polygala tenuifolia*.

Component of Yuan Zhi

[融点] Mp 95 °C



----- 文献 -----

Jin, B. et al., CA, 1994, 120, 240067s, (分離, butyl ester)

§  $\beta$ -D-Fructofuranosyl  $\beta$ -D-glucopyranosyl-(1 → 3)-  
 $\beta$ -D-glucopyranosyl-(1 → 3)-[ $\beta$ -D-glucopyranosyl-(1 → 2)]-  
 $\alpha$ -D-glucopyranoside; 1<sup>p</sup>,4<sup>A</sup>-Bis(4-hydroxy-*E*-cinnamoyl), 2<sup>p</sup>-benzoyl, 6<sup>p</sup>-Ac

[化学名・別名] Tenuifoliose K

[CAS No.] 147742-16-3

[化合物分類] 単環芳香族 (Simple phenylpropanoids),  
炭水化物 (Oligosaccharides)

[構造式]

[分子式]  $C_{57}H_{76}O_{32}$

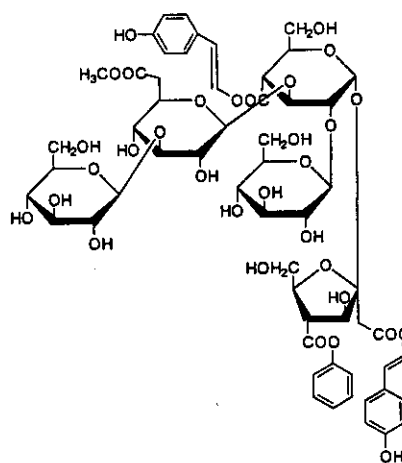
[分子量] 1267.161

[基原] *Polygala tenuifolia*

[性状] 粉末・二水和物

[比旋光度]:  $[\alpha]_D^{24} -3.2$  (c, 0.7 in H<sub>2</sub>O)

UV: [neutral]  $\lambda_{max}$  229 (log  $\epsilon$  4.58); 299 (sh) (log  $\epsilon$  4.63); 314 (log  $\epsilon$  4.7) (MeOH)



----- 文献 -----

Miyase, T. et al., Chem. Pharm. Bull., 1991, 39, 3082; 1992, 40, 2741, (分離, UV, H-NMR, C13-NMR)

Saitoh, H. et al., Chem. Pharm. Bull., 1994, 42, 1879, (分離, UV, H-NMR, C13-NMR)

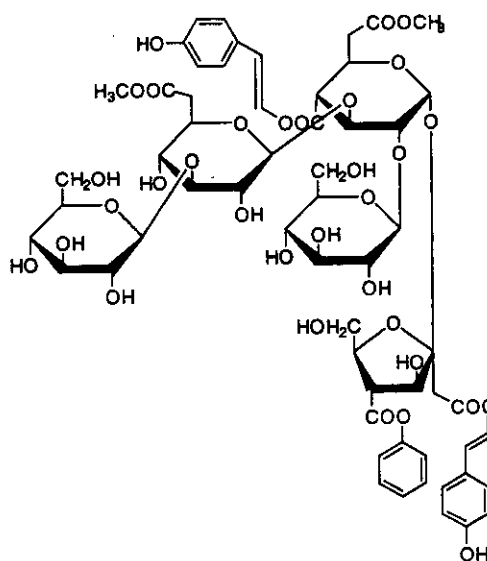
§  $\beta$ -D-Fructofuranosyl  $\beta$ -D-glucopyranosyl-(1 → 3)- $\beta$ -D-glucopyranosyl-(1 → 3)-[ $\beta$ -  
 $\beta$ -D-glucopyranosyl-(1 → 2)]- $\alpha$ -D-glucopyranoside; 1<sup>p</sup>,4<sup>A</sup>-Bis(4-hydroxy-*E*-cinnamoyl), 2<sup>p</sup>-benzoyl,  
4<sup>p</sup>,6<sup>A</sup>-di-Ac

[化学名・別名] Tenuifoliose J

[CAS No.] 147742-15-2

[化合物分類] 炭水化物 (Oligosaccharides),  
単環芳香族 (Simple phenylpropanoids)

[構造式]



[分子式]  $C_{59}H_{72}O_{33}$

[分子量] 1309.198

[基原] *Polygala tenuifolia*

[性状] 粉末・二水和物

[比旋光度]:  $[\alpha]_D^{24} -35.9$  (c, 1.4 in MeOH)

UV: [neutral]  $\lambda_{max}$  229 (log  $\epsilon$  4.45); 300 (sh) (log  $\epsilon$  4.61); 314 (log  $\epsilon$  4.67) (MeOH)

----- 文献 -----

Miyase, T. et al., Chem. Pharm. Bull., 1991, 39, 3082; 1992, 40, 2741, (分離, UV, H-NMR, C13-NMR)

Saitoh, H. et al., Chem. Pharm. Bull., 1994, 42, 1879, (分離, UV, H-NMR, C13-NMR)

§  $\beta$ -D-Fructofuranosyl  $\beta$ -D-glucopyranosyl-(1 → 3)- $\beta$ -D-glucopyranosyl-(1 → 3)-[ $\beta$ -  
 $\beta$ -D-glucopyranosyl-(1 → 2)]- $\alpha$ -D-glucopyranoside; 1<sup>p</sup>,4<sup>A</sup>-Bis(4-hydroxy-*E*-cinnamoyl), 2<sup>p</sup>-benzoyl,



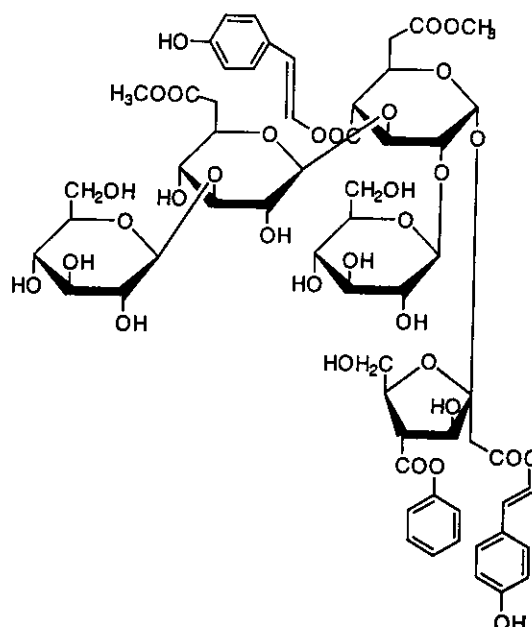
**6<sup>^</sup>,6<sup>^</sup>-di-Ac**

[化学名·别名] Tenuifoliose I

[CAS No.] 147742-14-1

[化合物分類] 单環芳香族 (Simple phenylpropanoids),  
炭水化物 (Oligosaccharides)

[構造式]

[分子式] C<sub>39</sub>H<sub>72</sub>O<sub>33</sub>

[分子量] 1309.198

[基原] *Polygala tenuifolia*[性状] 粉末 + 1·1/2H<sub>2</sub>O[比旋光度]: [α]<sub>D</sub><sup>24</sup> -9.1 (c, 1 in MeOH)UV: [neutral] λ<sub>max</sub> 229 (log ε 4.54); 296 (sh) (log ε 4.55); 315 (log ε 4.64) (MeOH)

----- 文献 -----

Miyase, T. et al., Chem. Pharm. Bull., 1991, 39, 3082; 1992, 40, 2741, (分離, UV, H-NMR, C13-NMR)

Saitoh, H. et al., Chem. Pharm. Bull., 1994, 42, 1879, (分離, UV, H-NMR, C13-NMR)

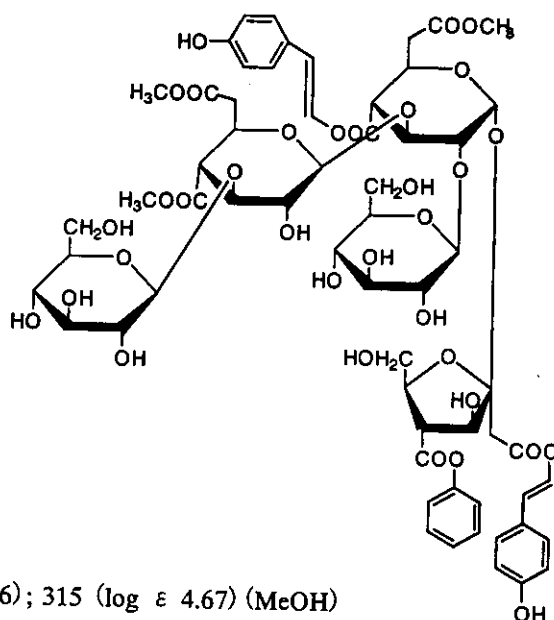
§ β -D-Fructofuranosyl β -D-glucopyranosyl-(1 → 3) -β -D-glucopyranosyl-(1 → 3) -[ β -D-glucopyranosyl-(1 → 2) ] -α -D-glucopyranoside; 1<sup>^</sup>,4<sup>^</sup>-Bis(4-hydroxy-E-cinnamoyl), 2<sup>^</sup>-benzoyl, 4<sup>^</sup>,6<sup>^</sup>,6<sup>^</sup>-tri-Ac

[化学名·别名] Tenuifoliose H

[CAS No.] 147742-13-0

[化合物分類] 单環芳香族 (Simple phenylpropanoids),  
炭水化物 (Oligosaccharides)

[構造式]

[分子式] C<sub>61</sub>H<sub>74</sub>O<sub>34</sub>

[分子量] 1351.235

[基原] *Polygala tenuifolia*

[性状] 粉末·二水和物

[比旋光度]: [α]<sub>D</sub><sup>24</sup> -26.3 (c, 1.9 in MeOH)UV: [neutral] λ<sub>max</sub> 229 (log ε 4.55); 301 (sh) (log ε 4.6); 315 (log ε 4.67) (MeOH)

----- 文献 -----

Miyase, T. et al., Chem. Pharm. Bull., 1991, 39, 3082; 1992, 40, 2741, (分離, UV, H-NMR, C13-NMR)

Saitoh, H. et al., Chem. Pharm. Bull., 1994, 42, 1879, (分離, UV, H-NMR, C13-NMR)

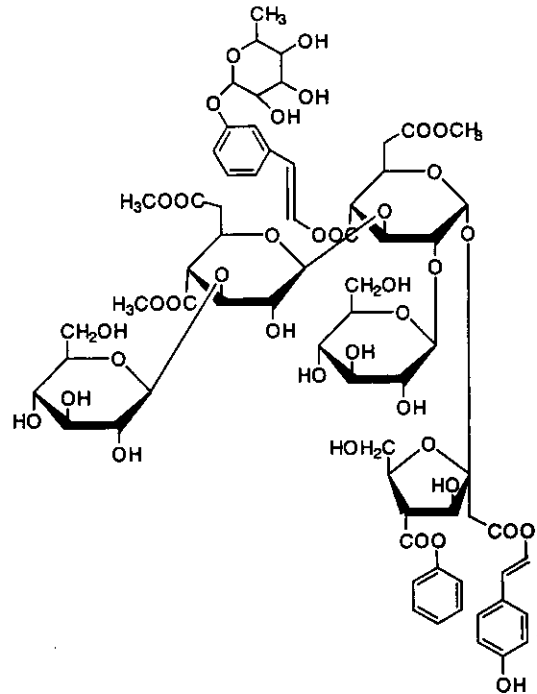
§ β -D-Fructofuranosyl β -D-glucopyranosyl-(1 → 3) -β -D-glucopyranosyl-(1 → 3) -[ β -D-glucopyranosyl-(1 → 2) ] -α -D-glucopyranoside; 1<sup>^</sup>-(4-Hydroxy-E-cinnamoyl), 4<sup>^</sup>-(4-O-α -D-rhamnopyranosyloxy-E-cinnamoyl), 2<sup>^</sup>-benzoyl, 4<sup>^</sup>,6<sup>^</sup>,6<sup>^</sup>-tri-Ac

[化学名·别名] Tenuifoliose L

[CAS No.] 147742-17-4

[化合物分類] 单環芳香族 (Simple phenylpropanoids),  
炭水化物 (Oligosaccharides)

[構造式]



[分子式]  $C_{67}H_{104}O_{38}$

[分子量] 1497.378

[基原] *Polygala tenuifolia*

[性状] 粉末 + 3·1/2H<sub>2</sub>O

[比旋光度]:  $[\alpha]_D^{25} -59.2$  (c, 0.9 in MeOH)

UV: [neutral]  $\lambda_{max}$  228 (log  $\epsilon$  4.57); 299 (sh) (log  $\epsilon$  4.64); 309 (log  $\epsilon$  4.66) (MeOH)

----- 文献 -----

Miyase, T. et al., Chem. Pharm. Bull., 1991, 39, 3082; 1992, 40, 2741, (分離, UV, H-NMR, C13-NMR)

Saitoh, H. et al., Chem. Pharm. Bull., 1994, 42, 1879, (分離, UV, H-NMR, C13-NMR)

§  $\beta$ -D-Fructofuranosyl  $\beta$ -D-glucopyranosyl-(1 → 3)- $\beta$ -D-glucopyranosyl-(1 → 3)-[ $\beta$ -D-glucopyranosyl-(1 → 2)]- $\alpha$ -D-glucopyranoside; 4<sup>A</sup>-(4-Hydroxy-3-methoxy-E-cinnamoyl), 1<sup>B</sup>-(4-hydroxy-E-cinnamoyl), 2<sup>B</sup>-benzoyl, 6<sup>A</sup>-Ac

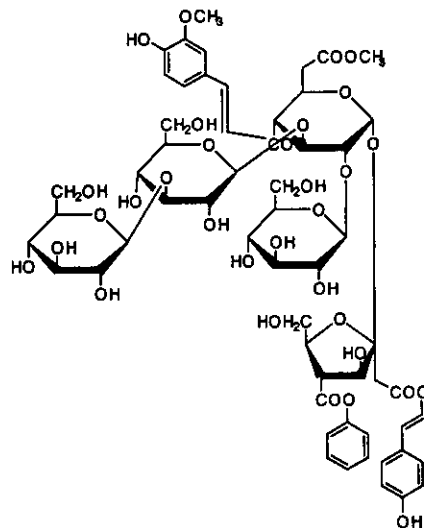
[化学名·別名] Tenuifoliose E

[CAS No.] 139682-05-6

[化合物分類] 炭水化物 (Oligosaccharides),

単環芳香族 (Simple phenylpropanoids)

[構造式]



[分子式]  $C_{58}H_{72}O_{33}$

[分子量] 1297.187

[基原] *Polygala tenuifolia*

[性状] 粉末

[比旋光度]:  $[\alpha]_D^{25} -2.2$

----- 文献 -----

Miyase, T. et al., Chem. Pharm. Bull., 1991, 39, 3082; 1992, 40, 2741, (分離, UV, H-NMR, C13-NMR)

Saitoh, H. et al., Chem. Pharm. Bull., 1994, 42, 1879, (分離, UV, H-NMR, C13-NMR)

§  $\beta$ -D-Fructofuranosyl  $\beta$ -D-glucopyranosyl-(1 → 3)- $\beta$ -D-glucopyranosyl-(1 → 3)-[ $\beta$ -D-glucopyranosyl-(1 → 2)]- $\alpha$ -D-glucopyranoside; 4<sup>A</sup>-(4-Hydroxy-E-cinnamoyl), 1<sup>B</sup>-(4-hydroxy-E-cinnamoyl),

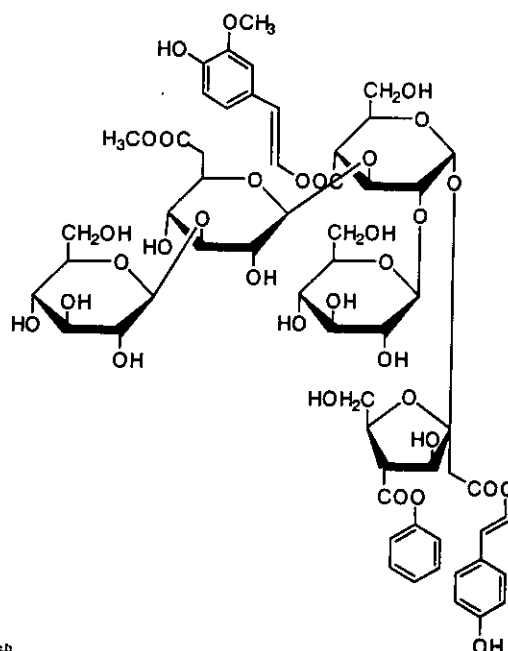
2<sup>B</sup>-benzoyl, 6<sup>B</sup>-Ac

[化学名·別名] Tenuifoliose C

[CAS No.] 139682-03-4

[化合物分類] 炭水化物 (Oligosaccharides),

单環芳香族 (Simple phenylpropanoids)  
[構造式]



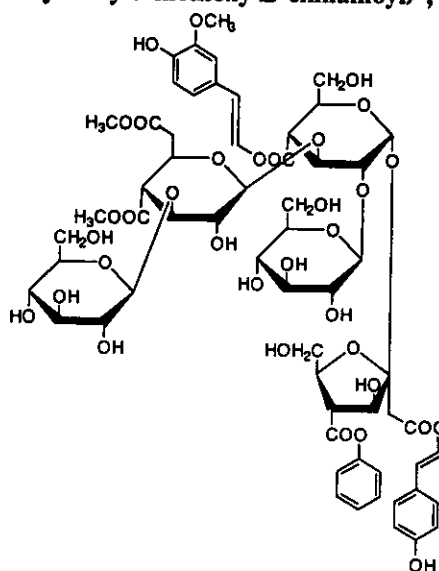
[分子式]  $C_{53}H_{72}O_{33}$   
[分子量] 1297.187  
[基原] *Polygala tenuifolia*  
[性状] 粉末  
[比旋光度]:  $[\alpha]_D^{25} -8.3$

文献

Miyase, T. et al., Chem. Pharm. Bull., 1991, 39, 3082; 1992, 40, 2741, (分離, UV, H-NMR, C13-NMR)  
Saitoh, H. et al., Chem. Pharm. Bull., 1994, 42, 1879, (分離, UV, H-NMR, C13-NMR)

§  $\beta$ -D-Fructofuranosyl  $\beta$ -D-glucopyranosyl-(1  $\rightarrow$  3) -  $\beta$ -D-glucopyranosyl-(1  $\rightarrow$  3) - [  $\beta$ -D-glucopyranosyl-(1  $\rightarrow$  2) ] -  $\alpha$ -D-glucopyranoside; 4<sup>^</sup>-(4-Hydroxy-3-methoxy-*E*-cinnamoyl), 1<sup>^</sup>-(4-hydroxy-*E*-cinnamoyl), 2<sup>^</sup>-benzoyl, 4<sup>^</sup>,6<sup>^</sup>-di-Ac

[化学名·別名] Tenuifoliose B  
[CAS No.] 139682-02-3  
[化合物分類] 炭水化物 (Oligosaccharides),  
单環芳香族 (Simple phenylpropanoids)  
[構造式]



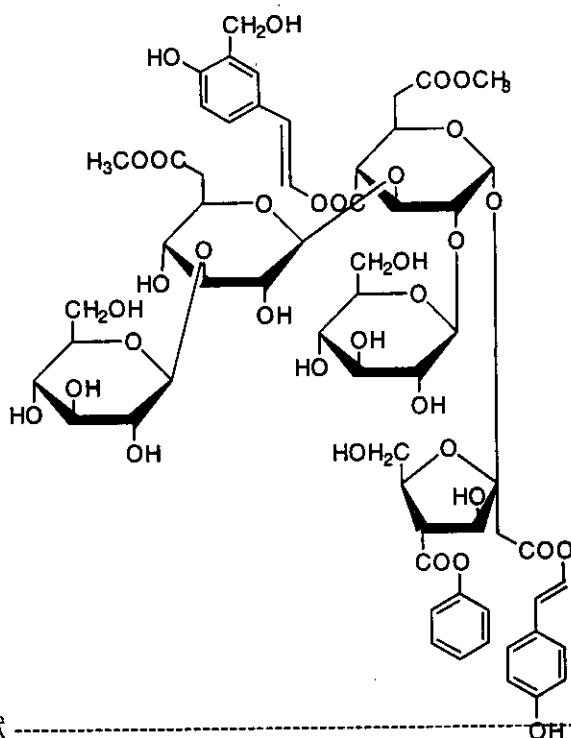
[分子式]  $C_{60}H_{74}O_{34}$   
[分子量] 1339.224  
[基原] *Polygala tenuifolia*  
[性状] 粉末  
[比旋光度]:  $[\alpha]_D^{25} -35.9$

文献

Miyase, T. et al., Chem. Pharm. Bull., 1991, 39, 3082; 1992, 40, 2741, (分離, UV, H-NMR, C13-NMR)  
Saitoh, H. et al., Chem. Pharm. Bull., 1994, 42, 1879, (分離, UV, H-NMR, C13-NMR)

§  $\beta$ -D-Fructofuranosyl  $\beta$ -D-glucopyranosyl-(1  $\rightarrow$  3) -  $\beta$ -D-glucopyranosyl-(1  $\rightarrow$  3) - [  $\beta$ -D-glucopyranosyl-(1  $\rightarrow$  2) ] -  $\alpha$ -D-glucopyranoside; 4<sup>^</sup>-(4-Hydroxy-3-methoxy-*E*-cinnamoyl), 1<sup>^</sup>-(4-hydroxy-*E*-cinnamoyl), 2<sup>^</sup>-benzoyl, 6<sup>^</sup>,6<sup>^</sup>-di-Ac

[化学名·別名] Tenuifoliose D  
[CAS No.] 139682-04-5  
[化合物分類] 单環芳香族 (Simple phenylpropanoids),  
炭水化物 (Oligosaccharides)  
[構造式]



[分子式]  $C_{60}H_{74}O_{34}$   
 [分子量] 1339.224  
 [基原] *Polygala tenuifolia*  
 [性状] 粉末  
 [比旋光度]:  $[\alpha]_D^{25} -10.5$

文献

Miyase, T. et al., Chem. Pharm. Bull., 1991, 39, 3082; 1992, 40, 2741, (分離, UV, H-NMR, C13-NMR)  
 Saitoh, H. et al., Chem. Pharm. Bull., 1994, 42, 1879, (分離, UV, H-NMR, C13-NMR)

§  $\beta$ -D-Fructofuranosyl  $\beta$ -D-glucopyranosyl-(1 → 3)- $\beta$ -D-glucopyranosyl-(1 → 3)-[ $\beta$ -D-glucopyranosyl-(1 → 2)]- $\alpha$ -D-glucopyranoside; 4<sup>A</sup>-(4-Hydroxy-3-methoxy-E-cinnamoyl), 1<sup>B</sup>-(4-hydroxy-E-cinnamoyl), 2<sup>B</sup>-benzoyl, 4<sup>B</sup>,6<sup>A</sup>,6<sup>B</sup>-tri-Ac

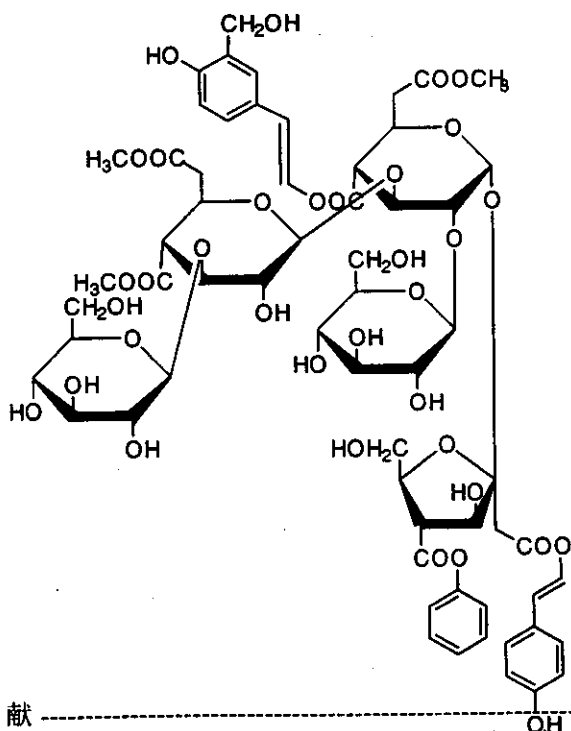
[化学名·别名] Tenuifoliose A

[CAS No.] 139682-01-2

[化合物分類] 炭水化物 (Oligosaccharides),

単環芳香族 (Simple phenylpropanoids)

[構造式]



[分子式]  $C_{62}H_{76}O_{35}$   
 [分子量] 1381.261  
 [基原] *Polygala tenuifolia*  
 [性状] 粉末  
 [比旋光度]:  $[\alpha]_D^{25} -32.8$

文献

Miyase, T. et al., Chem. Pharm. Bull., 1991, 39, 3082; 1992, 40, 2741, (分離, UV, H-NMR, C13-NMR)  
 Saitoh, H. et al., Chem. Pharm. Bull., 1994, 42, 1879, (分離, UV, H-NMR, C13-NMR)

§  $\beta$ -D-Fructofuranosyl  $\beta$ -D-glucopyranosyl-(1 → 3)- $\beta$ -D-glucopyranosyl-(1 → 3)-[ $\beta$ -D-glucopyranosyl-(1 → 2)]- $\alpha$ -D-glucopyranoside; 1<sup>B</sup>-(4-Hydroxy-E-cinnamoyl), 4<sup>B</sup>-(4- $\alpha$ -L-rhamnopyranosyloxy-E-cinnamoyl), 2<sup>B</sup>-benzoyl, 6<sup>A</sup>,6<sup>B</sup>-di-Ac