

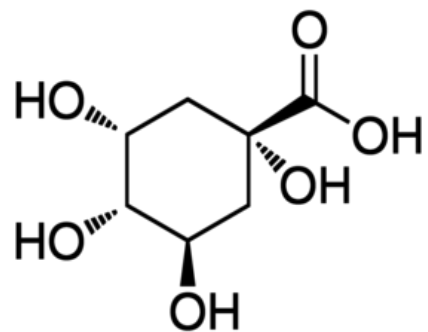
ID table

No.	Rt ^a (min)	Tentative Identification	<i>m/z</i>		M.W. ^b	MS Fragments pattern (<i>m/z</i>)	Molecular Formula	Δ ppm	REF ^c
			[M+H] ⁺	[M-H] ⁻					
<i>Phenolic acid</i>									
1	0.51	Quinic acid	215.0527 ^e	191.0553	192	191> 173	C7H12O6	-4.508	STD ^d
2	4.32	<i>p</i> -Coumaric acid hexoside	349.1831 ^e	325.0930	326	325> 163, 121, 119	C15H18O8	0.490	REF[1]
<i>Flavonoids</i>									
3	3.41	Gallocatechin	307.0811	305.0668	306	305, 289, 219, 181, 167, 137, 125	C15H14O7	0.308	REF[2,3]
4	4.02	Procyanidin B	579.1500	577.1359	578	577> 521, 475, 443, 407, 289, 271	C30H26O12	1.353	REF[1,4]
5	4.27	Catechin	291.0863	289.0719	290	289> 245, 203, 191, 163, 137	C15H14O6	1.310	STD ^d
6	6.34	Quercitrin	449.1079	447.0939	448	447> 299, 179, 150	C21H20O11	0.585	STD ^d
7	6.49	Isorhamnetin O-glucoside	479.1188	477.1045	478	477> 314, 299, 165	C22H22O12	0.731	REF[5,6]
8	8.17	Quercetin (coumaroyl-glucoside)	611.1399	609.1260	610	609> 579, 531, 491, 445, 463, 329, 315, 300, 291	C30H26O14	1.001	REF[7]
9	10.31	Pinocembrin	257.0808	255.0663	256	255> 213, 185, 171, 151, 145, 107	C15H12O4	-0.012	STD ^d
<i>Lignan</i>									
10	5.64	Secoisolariciresinol-diglucoside	709.2681 ^e	731.2786 ^f	686	731> 475, 359, 345, 327, 313, 179, 167	C32H46O16	1.767	REF[8-10]
11	5.94	Lignan deriv.	985.4066	491.1930	492	491>473, 327, 313, 149	C25H32O10	1.404	REF[8,11]
12	6.07	Secoisolariciresinol-glucoside	547.2153 ^e	523.2196	524	523>475, 419, 361, 343, 327, 195, 165	C26H36O11	1.558	REF[8,10]
13	6.35	Secoisolariciresinol-xyloside	989.4346 ^g	539.2142 ^f	494	539> 493, 477, 361, 343, 300, 165	C25H34O10	1.540	REF[8,10]
14	6.44	Icariside E4	529.2053 ^e	551.2145 ^f	506	551> 381, 367, 341, 329, 314	C26H34O10	0.744	REF[7,8]
<i>Sesquiterpenoid</i>									
15	4.66	Roseoside	409.1831 ^e	431.1925 ^f	386	431>385, 367, 223	C19H30O8	0.765	REF[12,13]
<i>Long chain fatty acid</i>									
16	8.91	Pinellic acid	353.2300 ^e	329.2337	330	329> 229, 211, 179, 171	C18H34O5	0.293	REF[14,15]

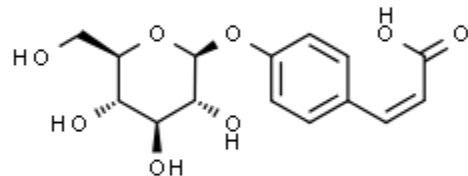
^a Retention time; ^b Molecular weight; ^c Reference; ^d Standard; ^e [M+Na]; ^f [M+FA-H]; ^g [2M+H]

Compound chemical structure derived from *PTP*

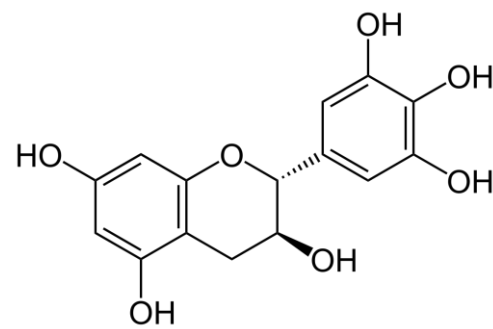
No.1 Quinic acid



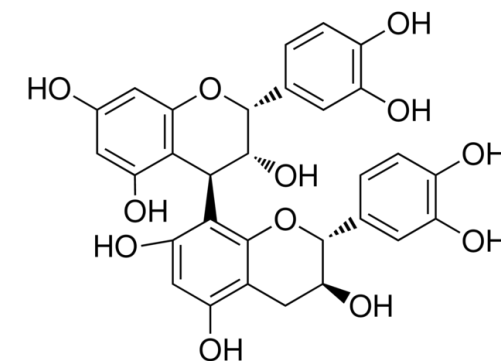
No.2 *p*-Coumaric acid hexoside



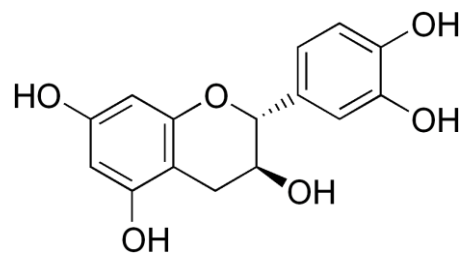
No.3 Gallocatechin



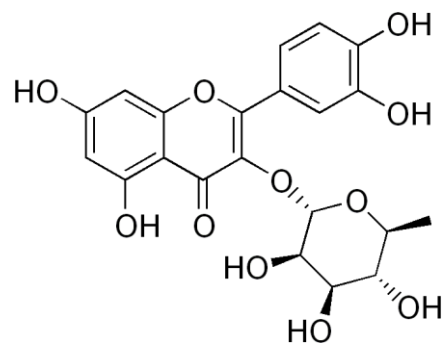
No.4 Procyanidin B



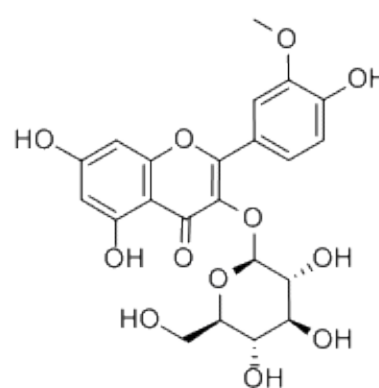
No.5 Catechin



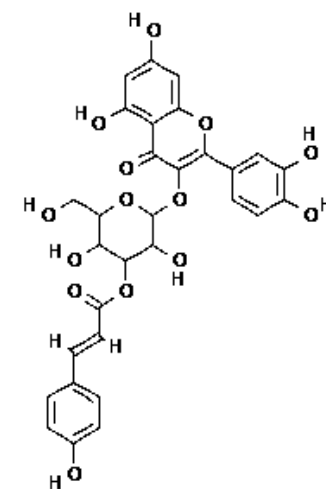
No.6 Quercitrin



No.7 Isorhamnetin O-glucoside

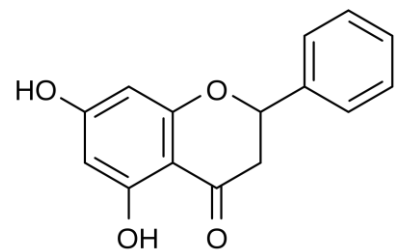


No.8 Quercetin (coumaroyl-glucoside)

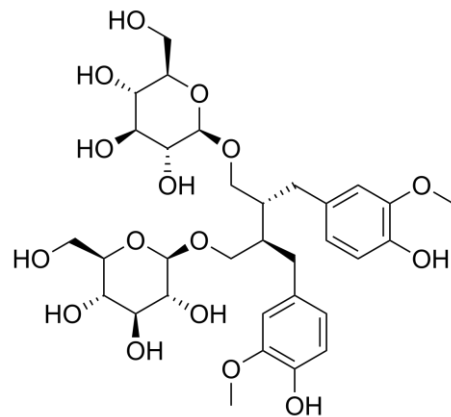


Compound chemical structure derived from *PTP*

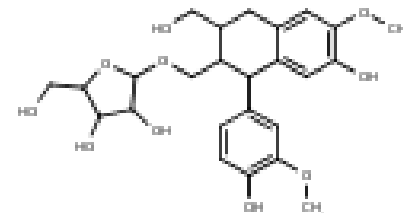
No.9 Pinocembrin



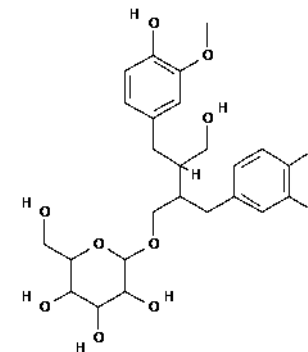
No.10 Secoisolariciresinol-diglucoside



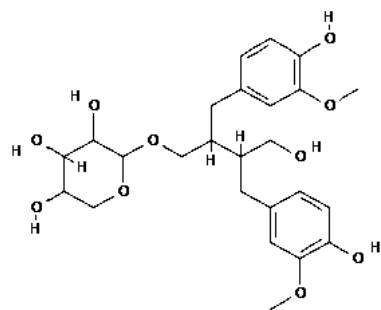
No.11 Lignan deriv.



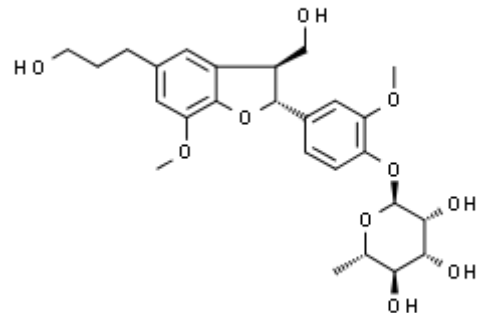
No.12 Secoisolariciresinol-glucoside



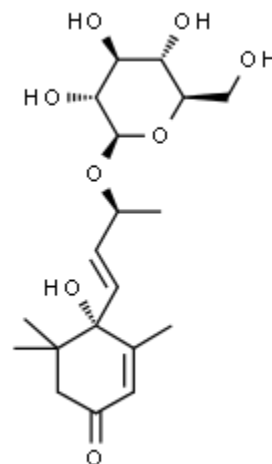
No.13 Secoisolariciresinol-xyloside



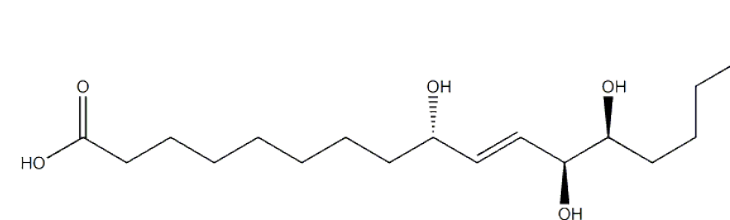
No.14 Icariside E4



No.15 Roseoside



No.16 Pinellic acid



Reference

- REF[1]** Mekky, Reham Hassan, et al. "Phenolic compounds from sesame cake and antioxidant activity: a new insight for agri-food residues' significance for sustainable development." *Foods* 8.10 (2019): 432.
- REF[2]** Yuzuak, Seyit, James Ballington, and De-Yu Xie. "HPLC-qTOF-MS/MS-Based Profiling of Flavan-3-ols and Dimeric Proanthocyanidins in Berries of Two Muscadine Grape Hybrids FLH 13-11 and FLH 17-66." *Metabolites* 8.4 (2018): 57
- REF[3]** Lundgren, Lennart N., and Olof Theander. "Cis-and trans-dihydroquercetin glucosides from needles of *Pinus sylvestris*." *Phytochemistry* 27.3 (1988): 829-832.
- REF[4]** Li, Ying-Ya, et al. "Pine bark extracts: nutraceutical, pharmacological, and toxicological evaluation." *Journal of Pharmacology and Experimental Therapeutics* 353.1 (2015): 9-16.
- REF[5]** Slimestad, R. "Flavonoids in buds and young needles of *Picea*, *Pinus* and *Abies*." *Biochemical systematics and ecology* 31.11 (2003): 1247-1255.
- REF[6]** Lei, Zhentian, et al. "Metabolomics of Two Pecan Varieties Provides Insights into Scab Resistance." *Metabolites* 8.4 (2018): 56.
- REF[7]** Chen, Guan-Heng, et al. "Characterization of vasorelaxant principles from the needles of *Pinus morrisonicola* Hayata." *Molecules* 23.1 (2018): 86..
- REF[8]** Li, Bo, et al. "Chemical constituents and biological activities of *pinus* species." *Chemistry & biodiversity* 10.12 (2013): 2133..
- REF[9]** Yashunsky, D. V., et al. "Analysis of content of (–)-secoisolariciresinol and related polyphenols in different morphological parts and anatomical structures of larch wood from *Siberia*." *Russian Chemical Bulletin* 63.11 (2014): 2571-2576.
- REF[10]** Quartieri, Andrea, et al. "Detection of novel metabolites of flaxseed lignans in vitro and in vivo." *Molecular nutrition & food research* 60.7 (2016): 1590-1601.
- REF[11]** Fischer, Ulrike Anna, et al. "Determination of lignans in edible and nonedible parts of pomegranate (*Punica granatum* L.) and products derived therefrom, particularly focusing on the quantitation of isolariciresinol using HPLC-DAD-ESI/MS n." *Journal of agricultural and food chemistry* 60.1 (2012): 283-292.
- REF[12]** Sun, Liqiong, Shutian Tao, and Shaoling Zhang. "Characterization and quantification of polyphenols and triterpenoids in thinned young fruits of ten pear varieties by UPLC-Q TRAP-MS/MS." *Molecules* 24.1 (2019): 159.
- REF[13]** Shen, YanBo, and Minoru Terazawa. "Dihydroroseoside, a new cyclohexanone glucoside, from the leaves of shirakamba (*Betula platyphylla* Sukatchev var. *japonica* Hara)." *Journal of wood science* 47.2 (2001): 145-148.
- REF[14]** Ruan, Jingya, et al. "Comprehensive Chemical Profiling in the Ethanol Extract of *Pluchea indica* Aerial Parts by Liquid Chromatography/Mass Spectrometry Analysis of Its Silica Gel Column Chromatography Fractions." *Molecules* 24.15 (2019): 2784.
- REF[15]** Peng, Wan-Xi, et al. "Determination of biomedicine resource of benzene/ethanol extractives of masson pine (*Pinus massoniana* L.) wood by Py-GC/MS." *2008 2nd International Conference on Bioinformatics and Biomedical Engineering*. IEEE, 2008.