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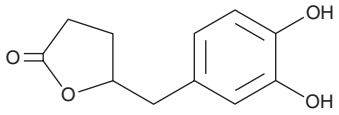
PRODUCT INFORMATION

5-(3',4'-Dihydroxyphenyl)-γ-Valerolactone

Item No. 36690

CAS Registry No.:	21618-92-8
Formal Name:	5-[(3,4-dihydroxyphenyl)methyl]dihydro-2(3H)-furanone
Synonyms:	(±)-δ-(3,4-Dihydroxyphenyl)-γ-Valerolactone, 5-(3',4'-Dihydroxyphenyl)-γ-VL
MF:	$C_{11}H_{12}O_4$
FW:	208.2
Purity:	≥95%
Supplied as:	A solid
Storage:	-20°C
Stability:	≥4 years
Item Origin:	Synthetic



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

5-(3',4'-Dihydroxyphenyl)-γ-valerolactone is supplied as a solid. A stock solution may be made by dissolving the 5-(3',4'-dihydroxyphenyl)-γ-valerolactone in the solvent of choice, which should be purged with an inert gas. 5-(3',4'-Dihydroxyphenyl)-γ-valerolactone is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of 5-(3',4'-dihydroxyphenyl)-γ-valerolactone in DMSO and DMF is approximately 10 mg/ml. 5-(3',4'-Dihydroxyphenyl)-γ-valerolactone is slightly soluble in ethanol.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of 5-(3',4'-dihydroxyphenyl)-γ-valerolactone can be prepared by directly dissolving the solid in aqueous buffers. The solubility of 5-(3',4'-dihydroxyphenyl)-γ-valerolactone in PBS (pH 7.2) is approximately 0.25 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

5-(3',4'-Dihydroxyphenyl)-γ-valerolactone is an active metabolite of various polyphenols, including (–)-epicatechin (Item No. 11807) and procyanidin (Item No. 29763).[1,2] It is formed from these polyphenols by gut microbiota. 5-(3',4'-Dihydroxyphenyl)-γ-valerolactone is an inhibitor of matrix metalloproteinase-1 (MMP-1) and MMP-2 collagen degradation activity (IC_{50}s = 108 and 106 nM, respectively), MMP-1 and MMP-9 gelatin degradation activity (IC_{50}s = 45.2 and 17.7 nM, respectively), and MMP-2 and MMP-9 elastin degradation activity (IC_{50}s = 61.8 and 89 nM, respectively).[3] It also scavenges free radicals in a Trolox equivalent antioxidant capacity (TEAC) assay.[1]

References

1. Unno, T., Tamemoto, K., Yayabe, F., *et al.* Urinary excretion of 5-(3',4'-dihydroxyphenyl)-γ-valerolactone, a ring-fission metabolite of (–)-epicatechin, in rats and its in vitro antioxidant activity. *J. Agric. Food Chem.* **51(23)**, 6893-6898 (2003).
2. Appeldoorn, M.M., Vincken, J.-P., Aura, A.-M., *et al.* Procyanidin dimers are metabolized by human microbiota with 2-(3,4-dihydroxyphenyl)acetic acid and 5-(3,4-dihydroxyphenyl)-γ-valerolactone as the major metabolites. *J. Agric. Food Chem.* **57(3)**, 1084-1092 (2009).
3. Grimm, T., Schäfer, A., and Högger, P. Antioxidant activity and inhibition of matrix metalloproteinases by metabolites of maritime pine bark extract (pycnogenol). *Free Radic. Biol. Med.* **36(6)**, 811-822 (2004).

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