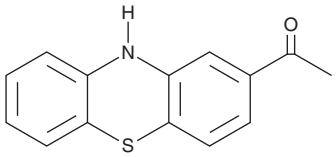
PRODUCT INFORMATION

2-Acetylphenothiazine

Item No. 19056

CAS Registry No.: 6631-94-3
Formal Name: 1-(10H-phenothiazin-2-yl)-ethanone
Synonyms: 2-APT, ML-171, NSC 57951, NSC 169669
MF: $C_{14}H_{11}NOS$
FW: 241.3
Purity: ≥98%
UV/Vis.: λ_{max}: 245, 282 nm
Supplied as: A crystalline solid
Storage: 4°C
Stability: ≥4 years



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

Laboratory Procedures

2-Acetylphenothiazine (2-APT) is supplied as a crystalline solid. A stock solution may be made by dissolving the 2-APT in the solvent of choice, which should be purged with an inert gas. 2-APT is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of 2-APT in these solvents is approximately 1, 20, and 25 mg/ml, respectively.

2-APT is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, 2-APT should first be dissolved in DMF and then diluted with the aqueous buffer of choice. 2-APT has a solubility of approximately 0.2 mg/ml in a 1:4 solution of DMF:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

2-APT is a selective, cell-active inhibitor of NADPH oxidase 1 (NOX1) that blocks the generation of reactive oxygen species (ROS) in HT-29 cells with an IC_{50} value of 0.129 µM.[1] It does not affect xanthine oxidase-dependent or mitochondrial ROS generation.[1] 2-APT prevents ROS-dependent formation of ECM-degrading invadopodia in colon cancer cells.[1] It also abolishes collagen-induced superoxide production by platelets (IC_{50} = 306 nM), preventing platelet aggregation and thrombus formation.[2] 2-APT protects beta cells from cytokine-induced apoptosis by inhibiting NOX1.[3] 2-APT can also activate the human transient receptor potential ankyrin 1 (TRPA1) nociceptor at 1-30 µM.[4]

References

1. Gianni, D., Taulet, N., Zhang, H., *et al*. A novel and specific NADPH oxidase-1 (Nox1) small-molecule inhibitor blocks the formation of functional invadopodia in human colon cancer cells. *ACS Chem. Biol*. **5(10)**, 981-993 (2010).
2. Vara, S., Campanella, M., and Pula, G. The novel NOX inhibitor 2-acetylphenothiazine impairs collagen-dependent thrombus formation in a GPVI-dependent manner. *Br. J. Pharmacol*. **168(1)**, 212-224 (2013).
3. Weaver, J.R., Grzesik, W., and Taylor-Fishwick, D.A. Inhibition of NADPH oxidase-1 preserves β cell function. *Diabetologia* **58(1)**, 113-121 (2015).
4. Suzuki, H., Hatano, N., Muraki, Y., *et al*. The NADPH oxidase inhibitor diphenyleneiodonium activates the human TRPA1 nociceptor. *Am. J. Physiol. Cell Physiol*. **307(4)**, C384-C394 (2014).

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