

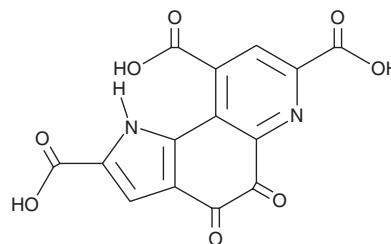
PRODUCT INFORMATION



Pyrroloquinoline quinone

Item No. 20681

CAS Registry No.: 72909-34-3
Formal Name: 4,5-dihydro-4,5-dioxo-1H-pyrrolo[2,3-f]quinoline-2,7,9-tricarboxylic acid
Synonym: PQQ
MF: C₁₄H₆N₂O₈
FW: 330.2
Purity: ≥95%
UV/Vis.: λ_{max}: 251, 371 nm
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



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

Laboratory Procedures

Pyrroloquinoline quinone (PQQ) is supplied as a crystalline solid. A stock solution may be made by dissolving the PQQ in the solvent of choice, which should be purged with an inert gas. PQQ is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of PQQ in these solvents is approximately 0.1, 2, and 1 mg/ml, respectively.

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 PQQ can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of PQQ in PBS (pH 7.2) is approximately 0.1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

PQQ is a quinone and redox enzyme cofactor that has been found in a variety of bacteria and has diverse biological activities.¹⁻⁵ It inhibits fibril formation by the amyloid proteins amyloid-β (1-42) (Aβ42) and mouse prion protein when used at a concentrations of 100 and 300 μM.¹ PQQ stimulates cell proliferation, reduces glutamate-induced production of reactive oxygen species (ROS), necrosis, and caspase-3 activity, and increases activity of superoxide dismutase (SOD), catalase (CAT), and glutathione peroxidase (GPX) in neural stem and progenitor cells.² It inhibits LPS-induced production of nitric oxide (NO) and prostaglandin E₂ (PGE₂) and suppresses LPS-induced expression of the pro-inflammatory mediators iNOS, COX-2, TNF-α, IL-1β, IL-6, MCP-1, and MIP-1α in primary microglia.⁶ *In vivo*, PQQ (3 and 10 mg/kg) reduces Iba-1 expression, a marker of microglial activation, in the cerebral cortex and hippocampal dentate gyrus in mice. PQQ decreases the number of hepatic cells positive for α-smooth muscle actin (α-SMA) and reduces collagen deposition and hepatic hydroxyproline levels in a mouse model of liver fibrosis.⁴ It also decreases serum glucose and total cholesterol levels, increases brain SOD, CAT, and GPX activities, and decreases brain lipid hydroperoxide levels in mice with diabetes induced by streptozotocin (Item No. 13104).⁵

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

Copyright Cayman Chemical Company, 12/19/2022

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

PRODUCT INFORMATION



References

1. Kim, J., Kobayashi, M., Fukuda, M., *et al.* Pyrroloquinoline quinone inhibits the fibrillation of amyloid proteins. *Prion* **4**(1), 26-31 (2010).
2. Guan, S., Xu, J., Guo, Y., *et al.* Pyrroloquinoline quinone against glutamate-induced neurotoxicity in cultured neural stem and progenitor cells. *Int. J. Dev. Neurosci.* **42**, 37-45 (2015).
3. Yang, C., Yu, L., Kong, L., *et al.* Pyrroloquinoline quinone (PQQ) inhibits lipopolysaccharide induced inflammation in part via downregulated NF- κ B and p38/JNK activation in microglial and attenuates microglia activation in lipopolysaccharide treatment mice. *PLoS One* **9**(10), e109502 (2014).
4. Jia, D., Duan, F., Peng, P., *et al.* Pyrroloquinoline-quinone suppresses liver fibrogenesis in mice. *PLoS One* **10**(3), e0121939 (2015).
5. Kumar, N. and Kar, A. Pyrroloquinoline quinone ameliorates oxidative stress and lipid peroxidation in the brain of streptozotocin-induced diabetic mice. *Can. J. Physiol. Pharmacol.* **93**(1), 71-79 (2015).
6. Yang, Y., Kuwano, T., Lagor, W.R., *et al.* Lipidomic analyses of female mice lacking hepatic lipase and endothelial lipase indicate selective modulation of plasma lipid species. *Lipids* **49**(6), 505-515 (2014).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM