

Product Information

Pyocyanin, Ready Made Solution from *Pseudomonas aeruginosa*

R9532

Storage Temperature –20 °C

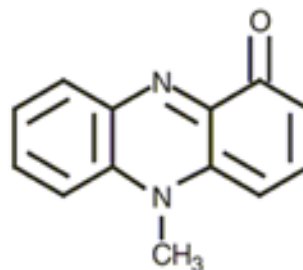
CAS RN 85-66-5

Synonyms: Sanasin, Sanazin, Pyocyanine

Molecular weight: 210.23

Molecular formula: C₁₃H₁₀N₂O

Purity: ≥ 98% (HPLC)



Product Description

Pyocyanin is a blue-green pigment, which belongs to the Phenazine family. It is an electron acceptor, which stimulates redox cycling in bacteria, liver cells, and human epithelial cell lines.^{1,2} Pyocyanin enhances oxidative metabolism, which increases the formation of intracellular reactive oxygen species (ROS) via reduction of NADPH.^{1,3,4}

Pyocyanin also increases the release of the neutrophil chemoattractant interleukin-8 (IL-8) by airway epithelial cells both *in vitro* and *in vivo*. This involves signal transduction pathways that include oxidants, protein tyrosin kinases, and MAP-kinases. IL-8 secretion by these cells is in synergy with inflammatory cytokines.^{1,4,5} Pyocyanin has been shown to accelerate neutrophil apoptosis *in vitro*. Mice infected with a pyocyanin-deficient strain of *P. aeruginosa* showed elevated levels of neutrophils, and neutrophil chemokines and cytokines, as well as compromised bacterial clearance from the lungs compared with mice infected with a wild type strain. This suggests that pyocyanin production by *P. aeruginosa* suppresses the acute inflammatory response by pathogen-driven acceleration of neutrophil apoptosis and by reducing local inflammation, and that this is advantageous for bacterial survival.⁶

Components

The product is supplied as a 5 mg/mL (24 mM) solution in DMSO.

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses.

Storage/Stability

Store the product sealed at –20 °C. Under these conditions the product is stable for at least 2 years.

References

1. Kanthakumar, K., et al., Mechanisms of action of *Pseudomonas aeruginosa* pyocyanin on human ciliary beat *in vitro*. *Infect. Immun.*, **61**: 2848-2853 (1993).
2. Da Silva, G.A., and de Almeida, E.A., Production of yellow-green fluorescent pigment by *Pseudomonas fluorescens*. *Braz. Arch. Biol. Technol.*, **49**: 411-419 (2006).
3. Price-Whelan, A., et al., Pyocyanin alters redox homeostasis and carbon flux through central metabolic pathways in *Pseudomonas aeruginosa* PA14. *J. Bacteriol.*, **189**: 6372-6381 (2007).

4. O'Malley, Y.Q., et al., *Pseudomonas aeruginosa* pyocyanin directly oxidizes glutathione and decreases its levels in airway epithelial cells. *Am. J. Physiol. Lung Cell. Mol. Physiol.*, **287**: L94-L103 (2004).
5. Denning, G.M., et al., *Pseudomonas* pyocyanin increases interleukin-8 expression by human airway epithelial cells. *Infect. Immun.*, **66**: 5777-5784 (1998).
6. Allen, L., et al., Pyocyanin production by *Pseudomonas aeruginosa* induces neutrophil apoptosis and impairs neutrophil-mediated host defenses *in vivo*. *J. Immunol.*, **174**: 3643-3649 (2005).

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