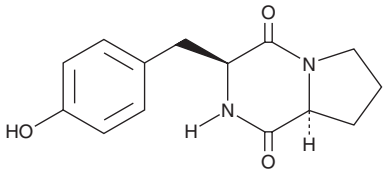
PRODUCT INFORMATION

Maculosin

Item No. 25019

CAS Registry No.: 4549-02-4
Formal Name: (3S,8aS)-hexahydro-3-[(4-hydroxyphenyl) methyl]-pyrrolo[1,2-a]pyrazine-1,4-dione
Synonym: Cyclo(L-Pro-L-Tyr)
MF: $C_{14}H_{16}N_2O_3$
FW: 260.3
Purity: ≥95%
Supplied as: A 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

Maculosin is supplied as a solid. A stock solution may be made by dissolving the maculosin in the solvent of choice, which should be purged with an inert gas. Maculosin is soluble in organic solvents such as ethanol, methanol, DMSO, and dimethyl formamide.

Description

Maculosin is a diketopiperazine metabolite produced by *A. alternata*, *L. capsici*, *Streptomyces*, and the Gram-negative, nonobligate predator bacterial strain 679-2.[1-4] It acts as a host-specific phytotoxin, inducing formation of weeping necrotic lesions in leaves of spotted knapweed (*C. maculosa*) when used at a concentration of 10 µM.[1] Maculosin reduces the growth of the plant pathogenic bacteria *X. axonopodis* and *R. solanacearum* (MICs = 31.25 µg/ml) as well as the pathogenic oomycetes *P. cactorum*, *P. capsici*, *P. cinnamomi*, *P. infestans*, and *P. ultimum* when used at concentrations ranging from 10 to 100 mg/ml.[2,3] Maculosin also inhibits the growth of *M. luteus*, *M. smegmatis*, *S. cerevisiae*, *C. albicans*, *C. neoformans*, and *A. niger* when used in combination with pyrrolnitrin or banegasin.[4]

References

1. Stierle, A.C., Cardellina, J.H., and Strobel, G.A. Maculosin, a host-specific phytotoxin for spotted knapweed from *Alternaria alternata*. *Proc. Natl. Acad. Sci. U.S.A.* **85(21)**, 8008-8011 (1988).
2. Puopolo, G., Cimmino, A., Palmieri, M.C., *et al.* *Lysobacter capsici* AZ78 produces cyclo(L-Pro-L-Tyr), a 2,5-diketopiperazine with toxic activity against sporangia of *Phytophthora infestans* and *Plasmopara viticola*. *J. Appl. Microbiol.* **117(4)**, 1168-1180 (2014).
3. Wattana-Amorn, P., Charoenwongsa, W., Williams, C., *et al.* Antibacterial activity of cyclo(L-Pro-L-Tyr) and cyclo(D-Pro-L-Tyr) from *Streptomyces* sp. strain 22-4 against phytopathogenic bacteria. *Nat. Prod. Res.* **30(17)**, 1980-1983 (2016).
4. Cain, C.C., Lee, D., Waldo, R.H., III, *et al.* Synergistic antimicrobial activity of metabolites produced by a nonobligate bacterial predator. *Antimicrob. Agents Chemother.* **47(7)**, 2113-2117 (2003).

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