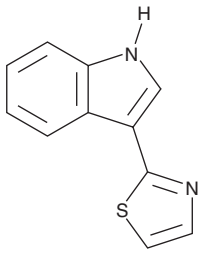
PRODUCT INFORMATION

Camalexin

Item No. 21971

CAS Registry No.: 135531-86-1
Formal Name: 3-(2-thiazolyl)-1H-indole
MF: $C_{11}H_8N_2S$
FW: 200.3
Purity: ≥98%
UV/Vis.: λ_{max}: 217, 319 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

Camalexin is supplied as a crystalline solid. A stock solution may be made by dissolving the camalexin in the solvent of choice, which should be purged with an inert gas. Camalexin is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of camalexin in these solvents is approximately 10, 33, and 14 mg/ml, respectively.

Camalexin is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, camalexin should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. Camalexin has a solubility of approximately 0.02 mg/ml in a 1:40 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Camalexin is an alkaloid released by plants of the *Brassicaceae* family in response to pathogen infection.[1] In addition to antimicrobial properties and a role in plant defense, camalexin exhibits antiproliferative activity *in vitro* against various cancer cell lines.[2-5] Camalexin is active against HeLa, Jurkat, MDA-MB-231, and CEM cancer cell lines (IC_{50}s = 50.0, 46.2, 77.7, and 67.6 µM, respectively), but it is also toxic to primary human umbilical vein endothelial cells (HUVEC; IC_{50} = 74.0 µM).[3] Camalexin induces apoptosis in Jurkat cells by increasing reactive oxygen species (ROS) levels and activating caspase-8 and caspase-9.[2] In human prostate cancer cell lines, camalexin (25 µM) is more active against aggressive lines and increases ROS levels and apoptosis *via* cathepsin D relocation from lysosomes to the cytosol.[4,5]

References

1. Ahuja, I., Kissen, R., and Bones, A.M. Phytoalexins in defense against pathogens. *Trends Plant Sci.* **17(2)**, 73-90 (2012).
2. Mezencev, R., Updegrove, T., Kutschy, P., *et al.* Camalexin induces apoptosis in T-leukemia Jurkat cells by increased concentration of reactive oxygen species and activation of caspase-8 and caspase-9. *J. Nat. Med.* **65(3-4)**, 488-499 (2011).
3. Pilatova, M., Ivanova, L., Kutschy, P., *et al. In vitro* toxicity of camalexin derivatives in human cancer and non-cancer cells. *Toxicol. In Vitro* **27(2)**, 939-944 (2013).
4. Smith, B. A., Neal, C.L., Chetram, M., *et al.* The phytoalexin camalexin mediates cytotoxicity towards aggressive prostate cancer cells via reactive oxygen species. *J. Nat. Med.* **67(3)**, 607-618 (2013).
5. Smith, B., Randle, D., Mezencev, R., *et al.* Camalexin-induced apoptosis in prostate cancer cells involves alterations of expression and activity of lysosomal protease cathepsin D. *Molecules* **19(4)**, 3988-4005 (2014).

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