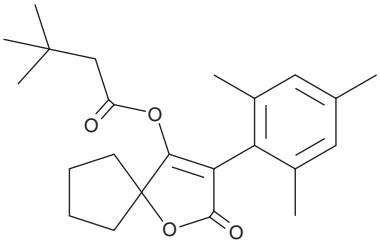
PRODUCT INFORMATION

Spiromesifen

Item No. 25822

CAS Registry No.: 283594-90-1
Formal Name: 3,3-dimethyl-butanoic acid, 2-oxo-3-(2,4,6-trimethylphenyl)-1-oxaspiro[4.4]non-3-en-4-yl ester
MF: $C_{23}H_{30}O_4$
FW: 370.5
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

Spiromesifen is supplied as a solid. A stock solution may be made by dissolving the spiromesifen in the solvent of choice, which should be purged with an inert gas. Spiromesifen is slightly soluble in chloroform, DMSO, and methanol.

Description

Spiromesifen is an insecticide and acaricide that reduces lipid biosynthesis *via* inhibition of acetyl-CoA carboxylase.[1,2] It inhibits chitinase from Egyptian cotton leafworm (*S. littoralis*) larvae (IC_{50}s = 0.60 and 0.72 µM for enzyme isolated from lab and field strains, respectively).[3] It induces toxicity in whitefly (*T. vaporariorum*) nymphs (LC_{50} = 0.61 mg/L), spider mite (*T. cinnabarinus*) eggs (LC_{50} = 0.16 mg/kg), and second instar larvae of *S. littoralis* lab and field strains (LC_{50}s = 0.44 and 0.68 ppm, respectively, at 72 hours post-application).[1-3] Spiromesifen (600 mg/kg) also induces 50, 60, and 70% mortality in the Lepidoptera pests *H. armigera*, *O. nubilalis*, and *P. xylostella*, respectively, and induces 100% mortality in *M. separata* when used at a concentration of 100 mg/kg.[2] It induces toxicity in *D. magna* (EC_{50} = >0.092 mg a.s./L) and the fish species *O. mykiss* and *L. macrochirus* (LC_{50}s = 0.016 and >0.034 mg a.s./L, respectively) but not rats (LD_{50} = >2,000 mg/kg).[4] Spiromesifen also inhibits the human GST isozyme GSTA1-1 (IC_{50} = 12.1 µM).[5] Formulations containing spiromesifen have been used as insecticides and miticides in agriculture, as well as commercial, industrial, and residential areas.

References

1. Karatolos, N., Williamson, M.S., Denholm, I., *et al.* Resistance to spiromesifen in *Trialeurodes vaporariorum* is associated with a single amino acid replacement in its target enzyme acetyl-coenzyme A carboxylase. *Insect Mol. Biol.* **21(3)**, 327-334 (2012).
2. Liu, Z., Lei, Q., Li, Y., *et al.* Design, synthesis, structure, and acaricidal/insecticidal activity of novel spirocyclic tetronic acid derivatives containing an oxalyl moiety. *J. Agric. Food Chem.* **59(23)**, 12543-12549 (2011).
3. Ismail, S.M. and Morshedy, M. Evaluation of some environmentally safe cemicals against *Spodoptera littoralis*. *Alexandria Sci. Exch. J.* **30(1)**, 121-127 (2009).
4. European Food Service Authority. Conclusion on the peer review of the pesticide risk assessment of the active substance spiromesifen. *EFSA J.* **10(10)**, 2879 (2012).
5. Chronopoulou, E.G., Papageorgiou, A.C., Markoglou, A., *et al.* Inhibition of human glutathione transferases by pesticides: Development of a simple analytical assay for the quantification of pesticides in water. *J. Mol. Catal. B: Enzymatic* **81**, 43-51 (2012).

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