Proceedings of the Eleventh International Conference on Urban Pests 2025
AF-Borgen, Academic Society, Lund, Sweden
William H Robinson, editor

ISOCYCLOSERAM: NOVEL MODEL OF ACTION & BROAD SPECTRUM OF ACTIVITY AGAINST URBAN PESTS AND PUBLIC HEALTH DISEASE VECTORS

[1]R. K. SARAN, [2]M. HOPPÉ, [1]B. BLAKELY, [2]L. VAVASSORI, [2]B. SLAATS
[1]Syngenta Crop Protection LLC, Greensboro, NC, USA
[2]Syngenta Crop Protection AG, Basel, Switzerland

Abstract Isoxazolines inhibit γ-aminobutyric acid chloride channels in insects and acarids by binding topostsynaptic receptors. This prevents chloride influx, leading to depolarization / hyperexcitation, paralysis, and death. Isocycloseram proved to be active against both laboratory and field populations of German cockroaches at lower or equal doses to those of other chemicals. Our studies demonstrated that isocycloseram was active at low doses against the German cockroach, *Blattella germanica* (L.) [median lethal dose (LD_{50}) 5–15 ng per insect at 72 h, topical assays]; common bed bug (*Cimex lectularius* (L.) (approximately 40 mg m^2, residual surface spray); and mosquito, *Anopheles stephensi* Liston (120 and 150 mg m^2 treated surfaces, aged indoors for 9 months). Additionally, cockroach gel bait at 1% isocycloseram (w/w) caused 95–100% mortality in German, American (*Periplaneta americana* (L.), and oriental (*Blatta orientalis* (L.) cockroaches within 5–14 days. Given its non-repellent nature, delayed effects, and activity at low rates, isocycloseram can be a very effective compound against subsocial, social, and other human disease vector insect pests.

Key words disease vectors, insecticide, isocycloseram