Insecticide Resistance Action Committee

MoA WG
2016/2017

51st IRAC International Meeting, Philadelphia
March 28th, 2017
MoA WG Team Members: 2016-2017

Team increased by 4 members

• ADAMA    Danny Karmon
• AgBiTech  Holly Popham*
• BASF      Vince Salgado & Barbara Wedel*
• Bayer     Ralf Nauen & Ulli Ebbinghaus-Kintscher
• DuPont    Dan Cordova (Team Leader)
• Dow       Tom Sparks & Jerry Watson
• Mitsui    Toshifumi Nakao* & Shinchi Banba* (guest members)
• NNI       Shinsuki Fujioka* & Kazuyuki Sakata (outgoing)
• Sumitomo  Shigeru Satio
• Syngenta  Andrew Crossthwaite (Deputy Team Leader) & Ferus Earley

• Excellent support from Alan Porter
Four conference calls (# of participants)

January 2016 (8)  August 2016 (7)
November 2016 (12)  January 2017 (11)

Focus

Enhancing external awareness of MoA Classification and changes

MoA WG Activities

Focus on enhancing the external awareness of MoA Classification and changes

<table>
<thead>
<tr>
<th>Group</th>
<th>Mode of Action</th>
<th>Hypothetical References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acetylcholinesterase (AChE) inhibitors</td>
<td>Noda T. Mechanism of action of organophosphates and carbamates in insecticides. Environmental impact: resistance to Pyrethroids.</td>
</tr>
<tr>
<td>2</td>
<td>Sodium channel modulators</td>
<td>Focused on understanding insecticide resistance.</td>
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<tr>
<td>3</td>
<td>GABA-gated chloride channel antagonists</td>
<td>Understanding Insecticide Resistance - The key to effective insect resistance management.</td>
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Insecticide Resistance Action Committee (IRAC)

Mode of Action Classification Update

The IRAC Mode of Action Classification Committee approved a new Mode of Action (MoA) for Afidopyropen as a sub-group 9D - Pyropenes. Afidopyropen's unique structural features (relative to pymetrozine and pyrifluquinazon) and lack of cross-resistance to pymetrozine makes it a valuable addition to the IRAC's Mode of Action Classification Scheme. The new MoA classification for Afidopyropen is now pending registration.
MoA Classification Updates

GS-omega/kappa-Hxtx-Hv1a
Vestaron requested dual MoA($K_{Ca}$ & $Ca_v$ channel blockers)
Classified in UN due to insufficient data supporting dual MoA

Azadirachtin
Reclassification request reviewed; maintained in UN as current evidence supports multiple actions without indication of target protein.

Etoxazole
Evidence supporting chitin synthase MoA is strong.
Concern for move to Group 15 given mite cross-resistance between certain 10A miticides. To be revisited

Nucleopolyhedrosis viruses
AgBitech request for new Group 30 (NPVs). Implications of including “non-traditional” insecticides (i.e. biopesticides, dsRNA, biologicals) raised concern with several members. Agreed to delay classification decision.

Afidopyropen
BASF request for Group 9D (Chordotonal organ – TRPV modulators) reviewed and approved
MoA Poster & Website Updates

Language posters
Spanish, Portuguese and Japanese posters updated; still waiting on Chinese update

Pest-Specific Posters
Mite (Ebbinghaus-Kintscher), Vector Control (Saito), Lep (Sparks), Sucking Pest (Nauen)

Resistance Mechanism Poster
Completed (Crossthwaite)

Website Upgrade
Subscription for classification

Mode of Action Classification Update
Mode of Action Classification of Afidopyropen as Subgroup 9D - Pyropenes

A 9D subgroup MoA classification for afidopyropen was approved by the IRAC MoA WG and the IRAC Executive based on its unique structure (relative to pymetrozine and pyrifluquinazon) and lack of cross - resistance to pymetrozine. Afidopyropen will be added to the MoA Classification Scheme once a registration is achieved. At the moment it is listed in Appendix 6 of the Scheme (pending registration).
New Additions to Website

MoA reference document

Initiated by V. Salgado; prepared by WG members

Key literature reference for each MoA group with embedded hyperlinks

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<tr>
<th>Group</th>
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<tr>
<td>3</td>
<td>Sodium channel modulators</td>
<td></td>
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MoA WG Activities

Establishing “comment period” for changes to existing MoA classifications
   Include generic providers
   Obtain list of key contacts

MoA Training Module
   Ongoing objective (since 2010)
   Waiting on BASF response for use of existing training slides
   Consideration for having external party generate IRAC version