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(71)申请人 江苏中旗科技股份有限公司
地址 210047 江苏省南京市化学工业园区长丰河路309号
(72)发明人 杨光富 魏阁 朱晓磊 王文杰 张璞 吴耀军 姚凯诚
(74)专利代理机构 北京润平知识产权代理有限公司 11283
代理人 陈静 刘国平
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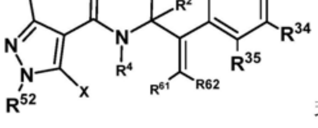
权利要求书15页 说明书28页

(54)发明名称

一种烯酰胺类化合物及其应用、一种杀菌剂及其应用

(57)摘要

本发明涉及农药新化合物领域，公开了一种烯酰胺类化合物及其应用、一种杀菌剂及其应用，该化合物具有式(I)所示的结构。本发明提供的烯酰胺类化合物对于琥珀酸脱氢酶具有较高抑制活性，且对于真菌病害也有较高的防效。



式(I)

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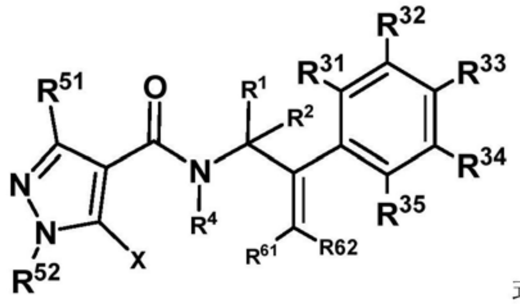
1.一种突烯酰胺类化合物，其特征在于，该化合物具有式(I)所示的结构，



式（I），

其中，在式(I)中，

X选自H、F、Cl；

R^1和R^2各自独立地选自H、卤素、C_{1-6}的烷基；或者R^1和R^2与它们共有的碳原子一起形成环丙基、环戊基或环己基；

R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、卤素、取代或未取代的C_{1-6}的烷基、C_{1-6}的烷氧基、氰基、C_{1-6}的烷基-磺酰基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的C_{2-4}的炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基各自独立地选自卤素、C_{1-6}的烷基、C_{1-6}的烷氧基、C_{1-6}的烷基-磺酰基、苯基、苯氧基、苄氧基、由1-3个卤素取代的C_{1-3}的烷基、由1-3个卤素取代的苯基、环丙基取代的C_{2-4}的炔基中的至少一种；

R^4选自C_{1-4}的烷基、C_{1-4}的烷氧基、氰基、三氟甲基、丙炔基；

R^{51}选自由1-3个卤素取代的C_{1-3}的烷基；R^{52}选自C_{1-4}的烷基。

R^{61}和R^{62}各自独立地选自H、F、Cl、Br。

2.根据权利要求1所述的化合物，其中，在式(I)中，

X选自H、F、Cl；

R^1和R^2各自独立地选自H、F、Cl、Br、C_{1-3}的烷基；

R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、卤素、取代或未取代的C_{1-4}的烷基、C_{1-4}的烷氧基、氰基、C_{1-3}的烷基-磺酰基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的乙炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基各自独立地选自卤素、C_{1-4}的烷基、C_{1-4}的烷氧基、C_{1-3}的烷基-磺酰基、苯基、苯氧基、苄氧基、由1-3个卤素取代的C_{1-3}的烷基、由1-3个卤素取代的苯基、环丙基取代的乙炔基中的至少一种；

R^4选自C_{1-3}的烷基、C_{1-3}的烷氧基、丙炔基；

R^{51}选自二氟甲基、三氟甲基；R^{52}选自甲基、乙基、正丙基、异丙基；

R^{61}和R^{62}各自独立地选自H、F、Cl、Br。

3.根据权利要求1所述的化合物，其中，在式(I)中，

X选自H、F、Cl；

R^1和R^2各自独立地选自H、F、Cl、Br、甲基、乙基、正丙基、异丙基、环丙基；

R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、F、Cl、Br、甲基、乙基、正丙基、异丙基、环丙基、正丁基、异丁基、叔丁基、甲氧基、乙氧基、三氟甲基、正丙氧基、异丙氧基、环丙氧基、正丁氧基、异丁氧基、叔丁氧基、氰基、甲基磺酰基、乙基磺酰基、正丙基磺酰基、异丙基磺酰基、环丙基磺酰基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的乙炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基各自独立地选自F、Cl、Br、甲

基、乙基、正丙基、异丙基、环丙基、正丁基、叔丁基、甲氧基、乙氧基、正丙氧基、异丙氧基、环丙氧基、环丙基取代的乙炔基、甲基磺酰基、乙基磺酰基、正丙基磺酰基、异丙基磺酰基、环丙基磺酰基、苯基、苯氧基、苄氧基、由1-3个选自F和/或Cl的卤素取代的C_{1-3}的烷基、由1-3个选自F和/或Cl的卤素取代的苯基中的至少一种；

R^4选自甲基、乙基、正丙基、异丙基、环丙基、甲氧基、乙氧基、正丙氧基、异丙氧基、丙炔基；

R^{51}选自二氟甲基、三氟甲基；R^{52}选自甲基、乙基；

R^{61}和R^{62}各自独立地选自H、F、Cl、Br。

4.根据权利要求1所述的化合物，其中，在式(I)中，

X选自H、F；

R^1和R^2各自独立地选自H、甲基、乙基、正丙基；

R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、F、Cl、Br、甲基、乙基、正丙基、异丙基、正丁基、叔丁基、甲氧基、三氟甲基、C_{1-3}的烷基-磺酰基、乙氧基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的乙炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基选自F、Cl、Br、甲基、乙基、正丙基、环丙基、异丙基、正丁基、叔丁基、环丙基取代的乙炔基、C_{1-3}的烷基-磺酰基中的至少一种；

R^4选自环丙基、甲氧基、乙氧基、丙炔基；

R^{51}为二氟甲基；R^{52}为甲基；

R^{61}和R^{62}各自独立地选自H、F、Cl、Br。

5.根据权利要求1-4中任意一项所述的化合物，其中，式(I)所示的化合物选自以下化合物中的至少一种：

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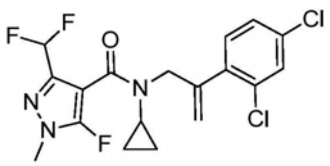
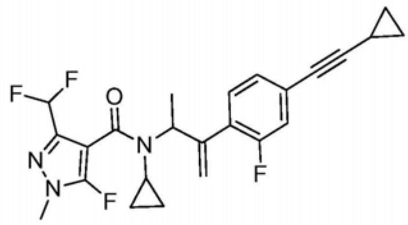
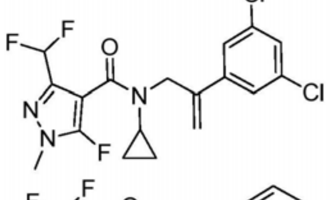
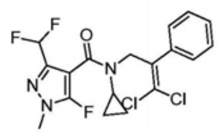
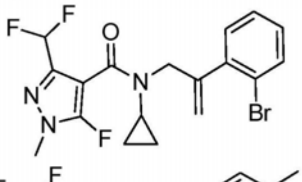
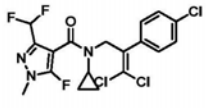
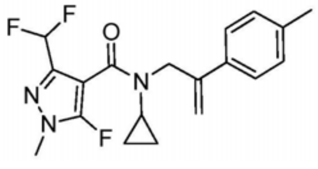
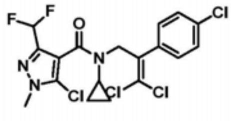
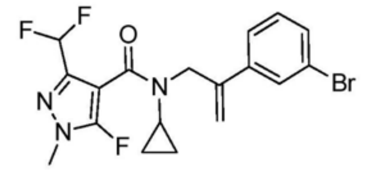
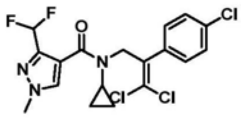
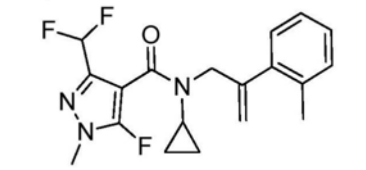
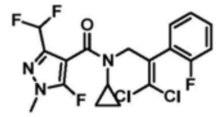
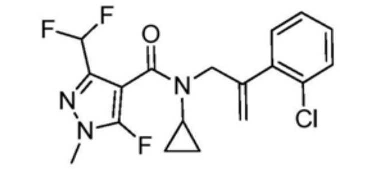
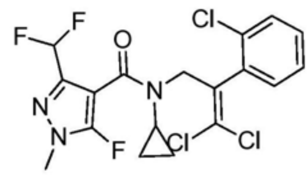
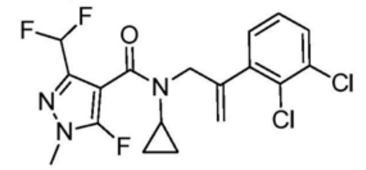
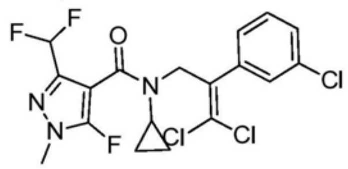
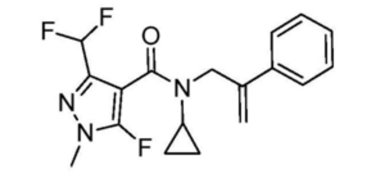
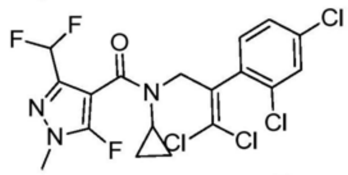
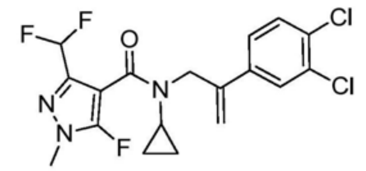
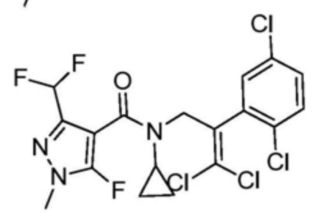
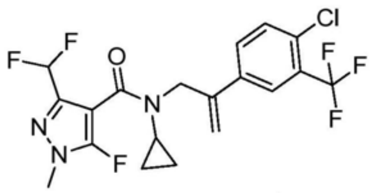
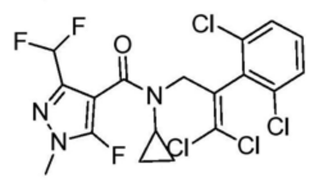
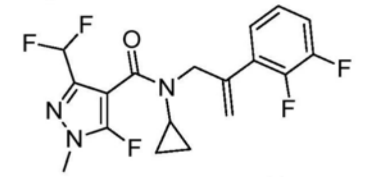
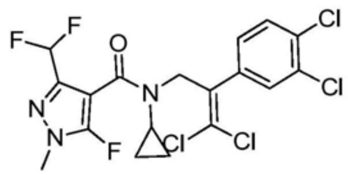
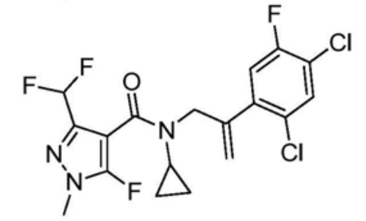
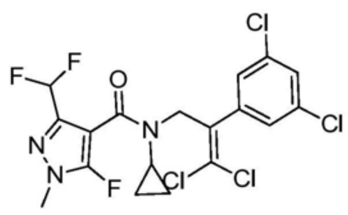
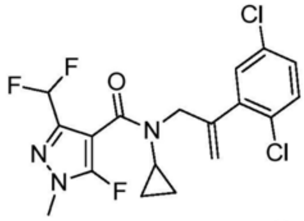
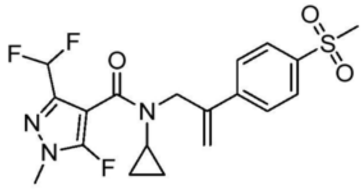
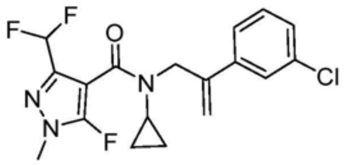
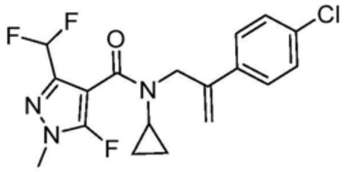
1		110	
2		111	
3		112	
4		113	

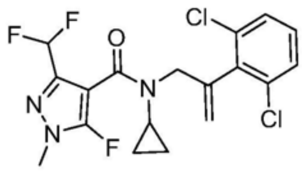
5		114	
6		115	
7		116	
8		117	
9		118	
10		119	
11		120	
12		121	
13		122	

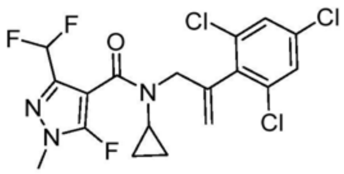
14 

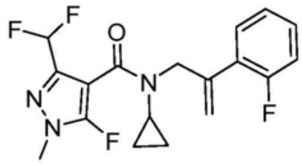
15 

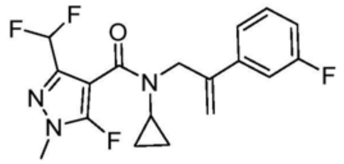
16 

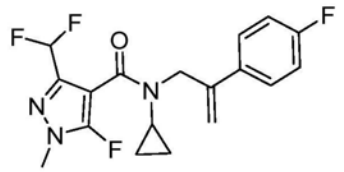
17 

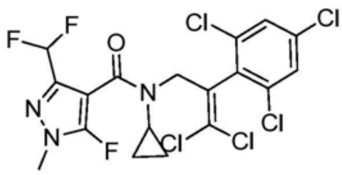
18 

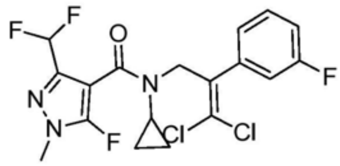
19 

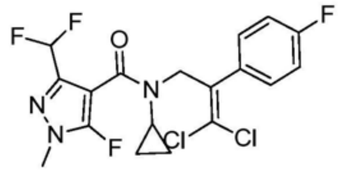
20 

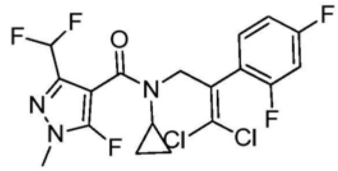
21 

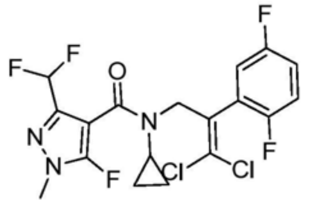
22 

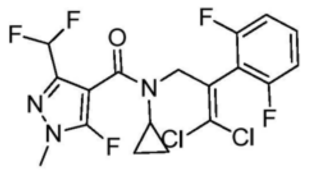
123 

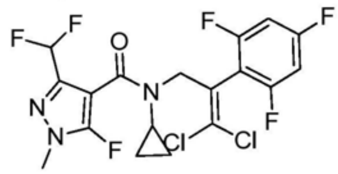
124 

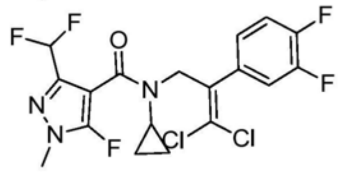
125 

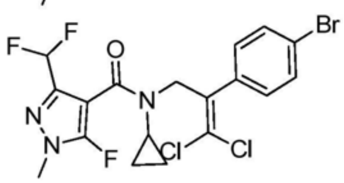
126 

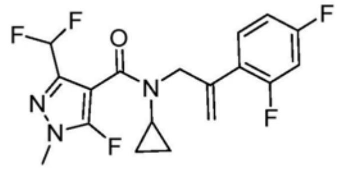
127 

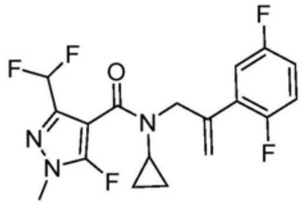
128 

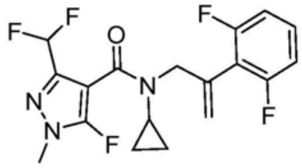
129 

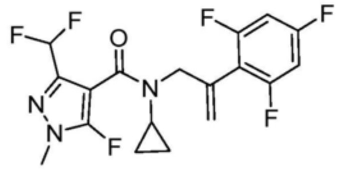
130 

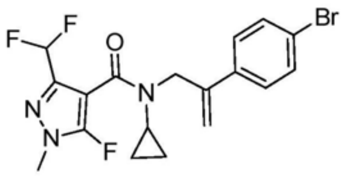
131 

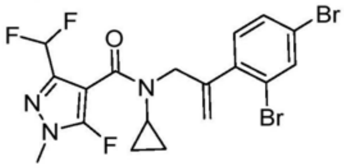
23 

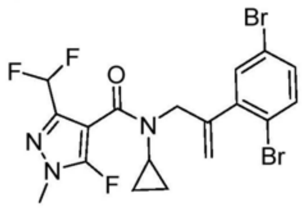
24 

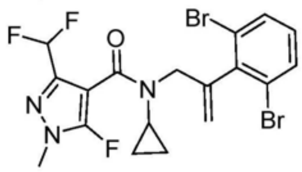
25 

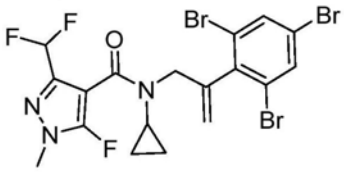
26 

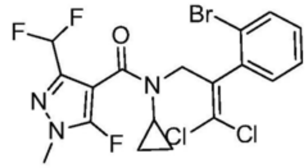
27 

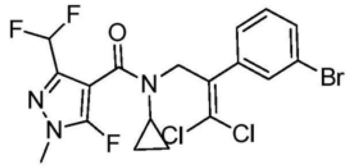
28 

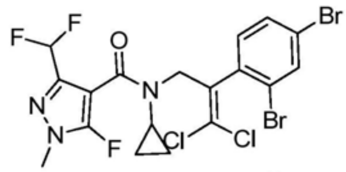
29 

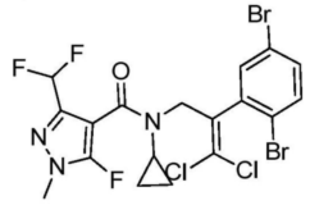
30 

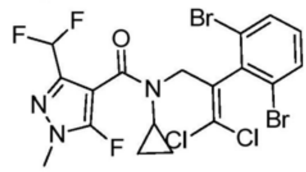
31 

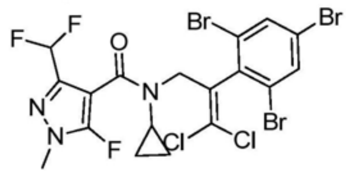
132 

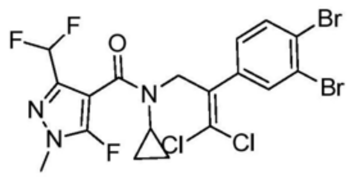
133 

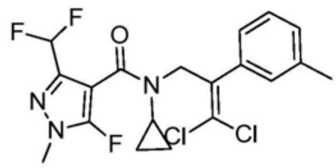
134 

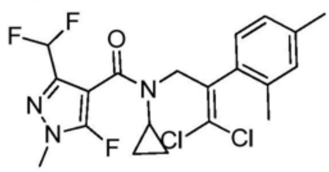
135 

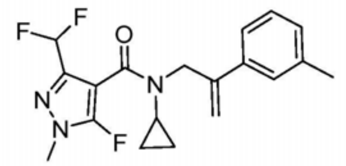
136 

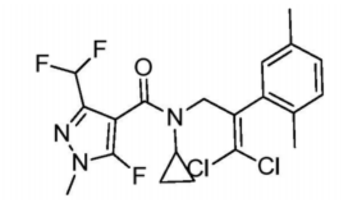
137 

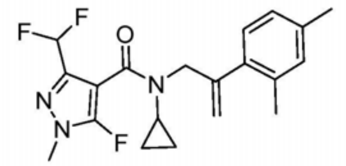
138 

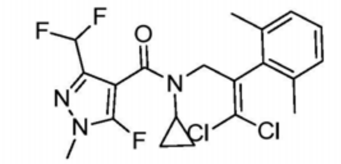
139 

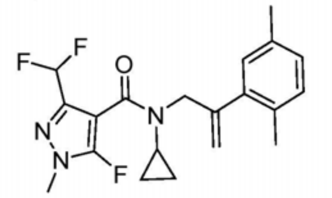
140 

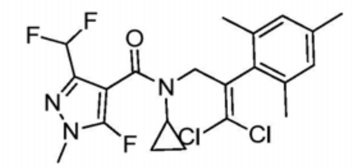
32 

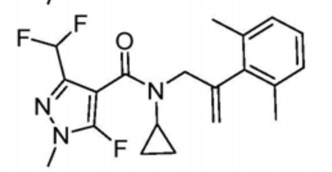
141 

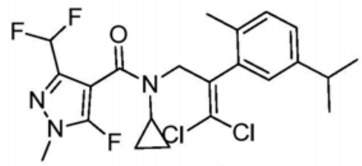
33 

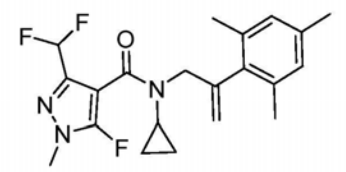
142 

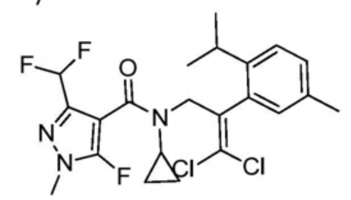
34 

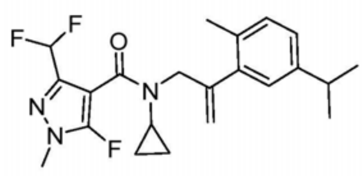
143 

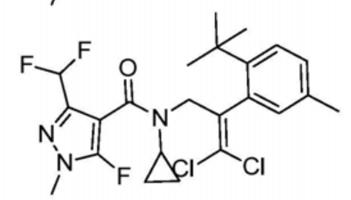
35 

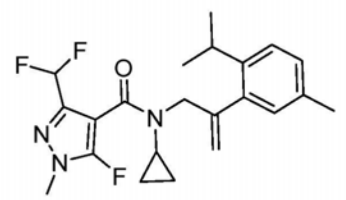
144 

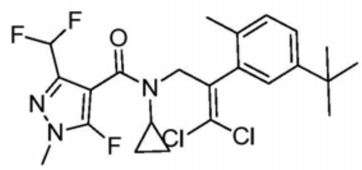
36 

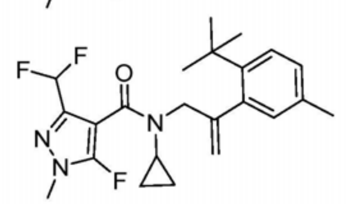
145 

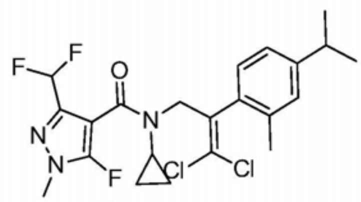
37 

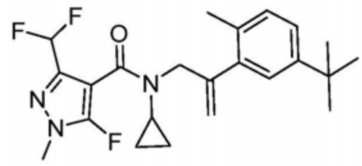
146 

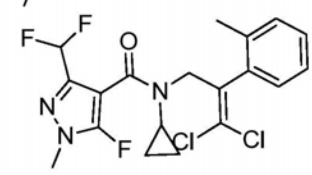
38 

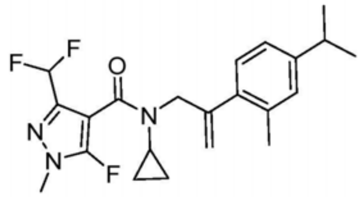
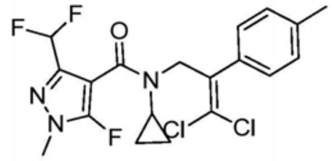
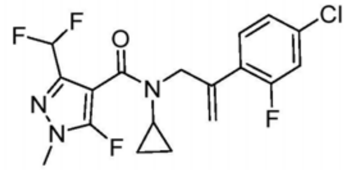
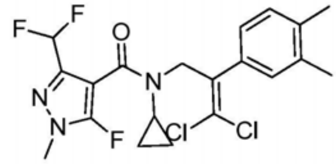
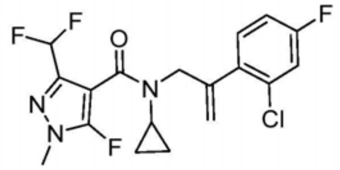
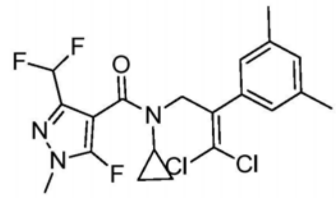
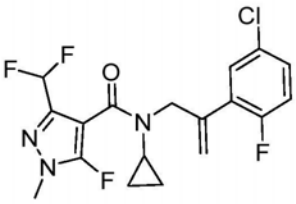
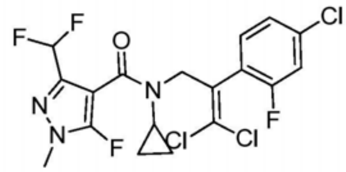
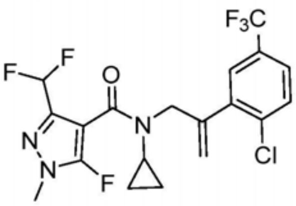
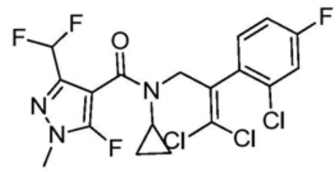
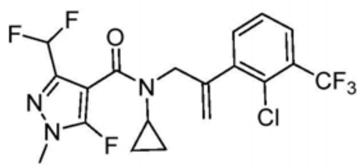
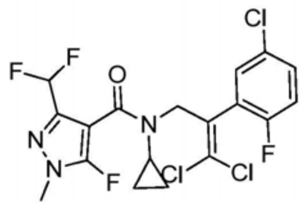
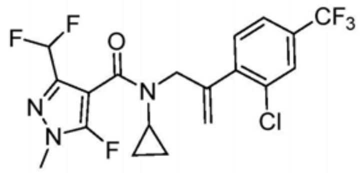
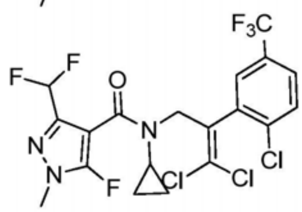
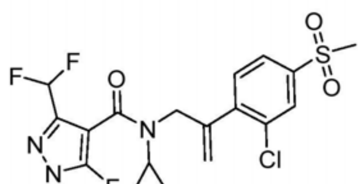
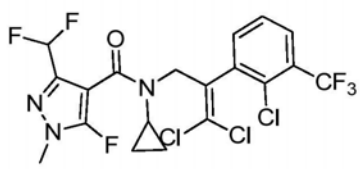
147 

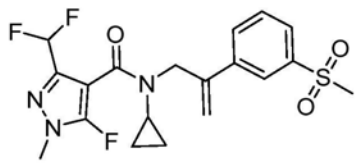
39 

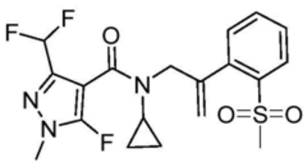
148 

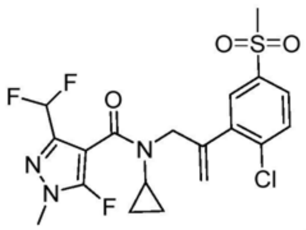
40 

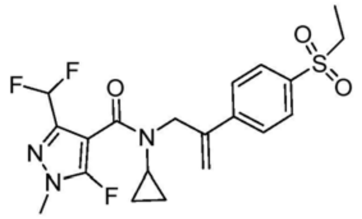
149 

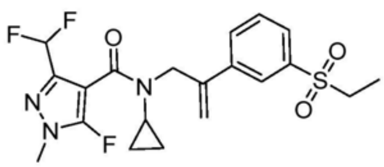
41		150	
42		151	
43		152	
44		153	
45		154	
46		155	
47		156	
48		157	

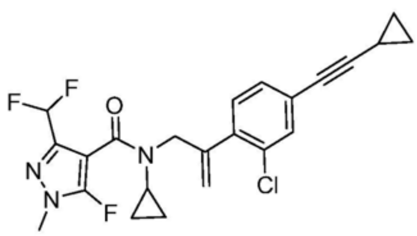
49 

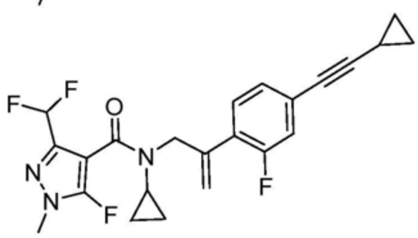
50 

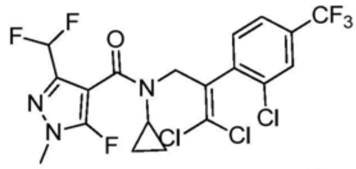
51 

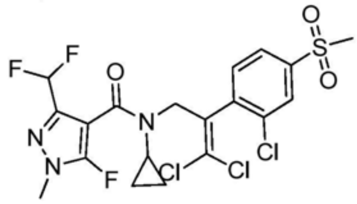
52 

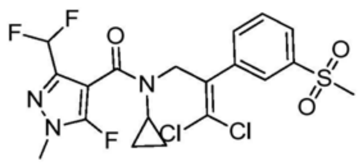
53 

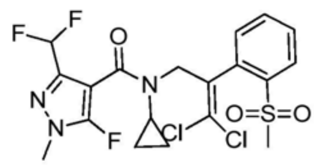
54 

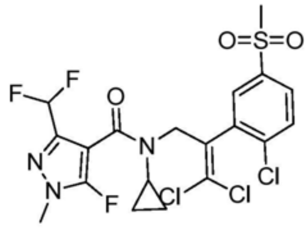
55 

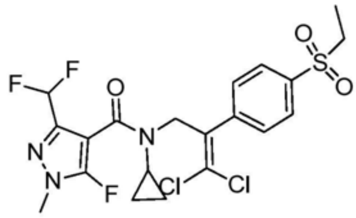
158 

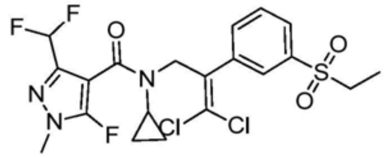
159 

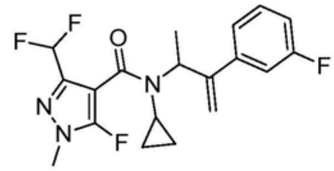
160 

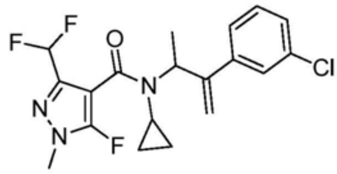
161 

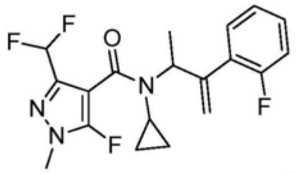
162 

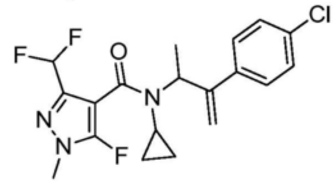
163 

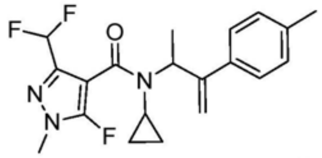
164 

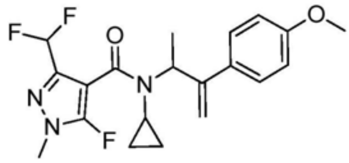
56 

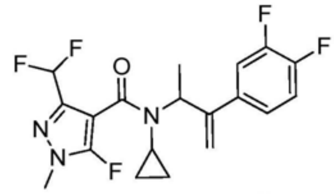
57 

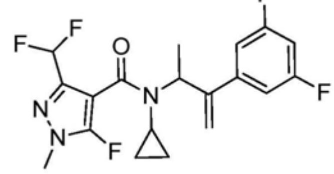
58 

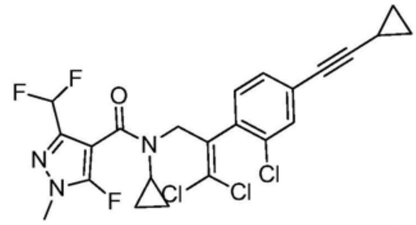
59 

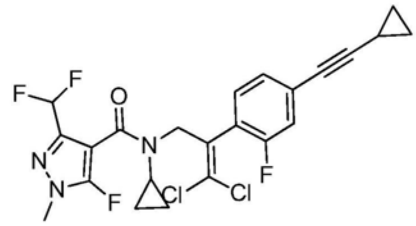
60 

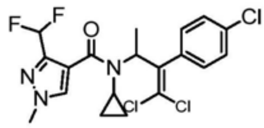
61 

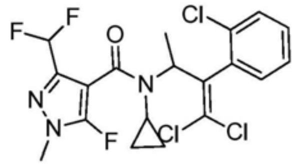
62 

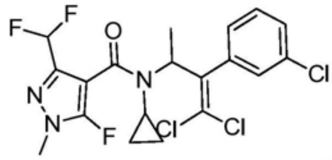
63 

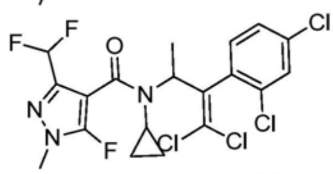
165 

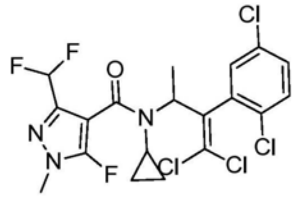
166 

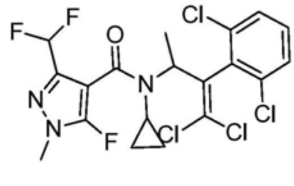
167 

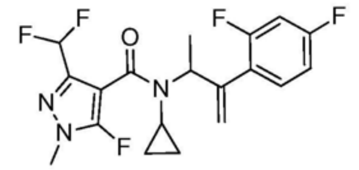
168 

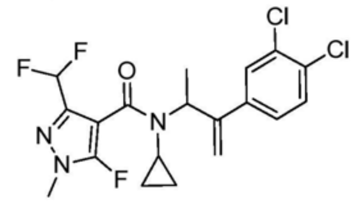
169 

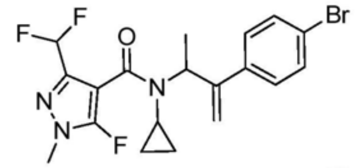
170 

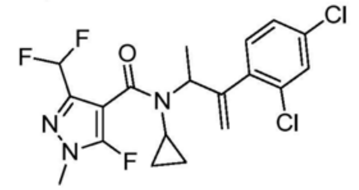
171 

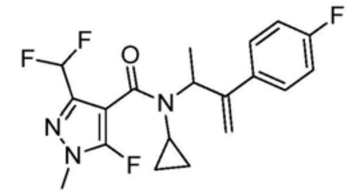
172 

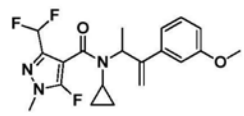
64 

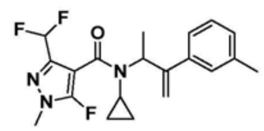
65 

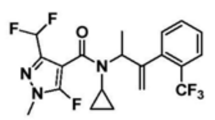
66 

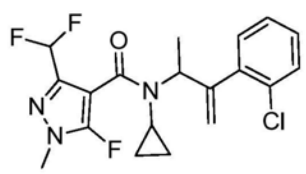
67 

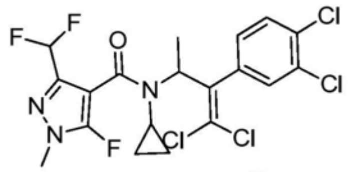
68 

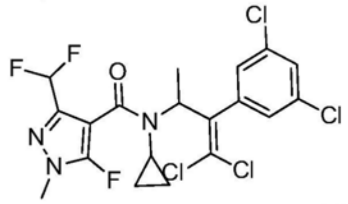
69 

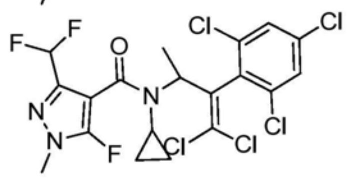
70 

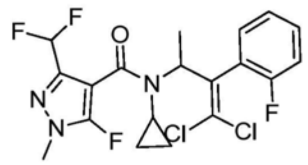
71 

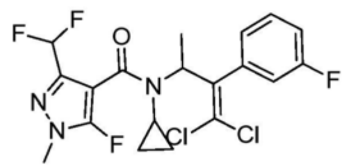
72 

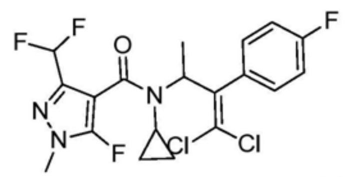
173 

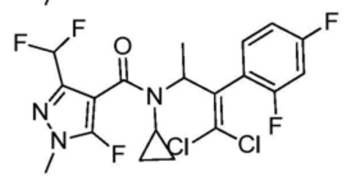
174 

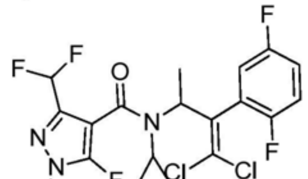
175 

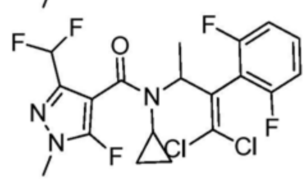
176 

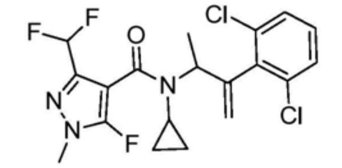
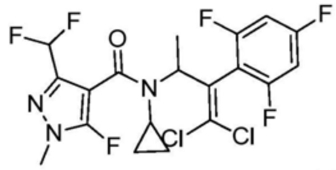
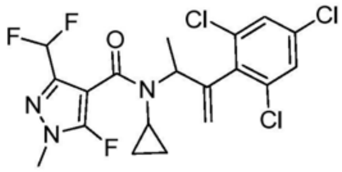
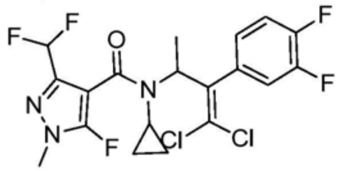
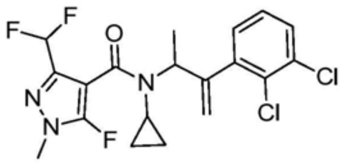
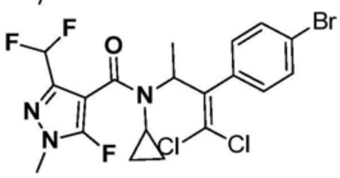
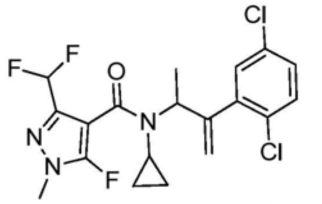
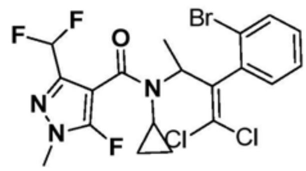
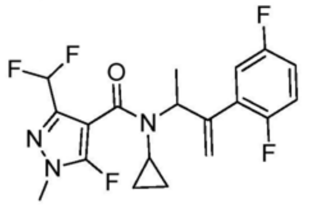
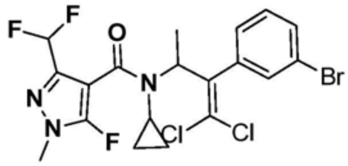
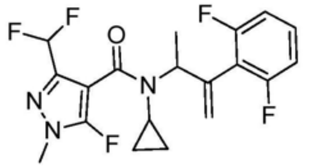
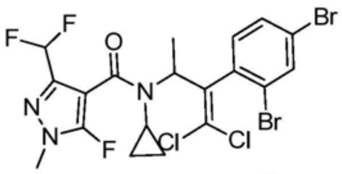
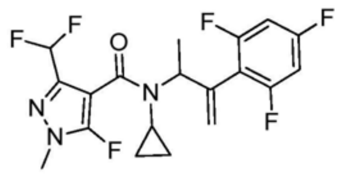
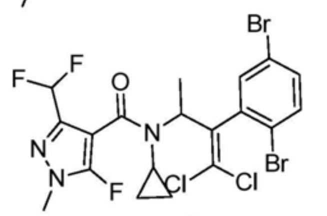
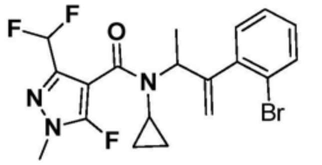
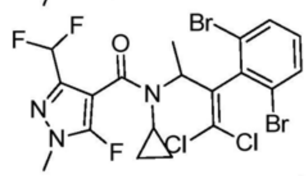
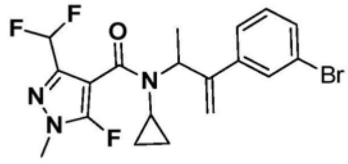
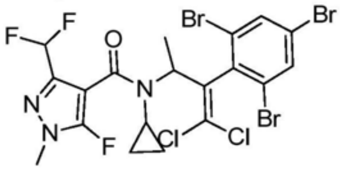
177 

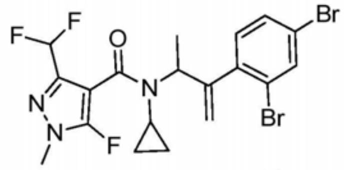
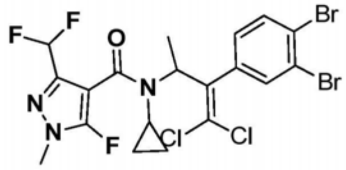
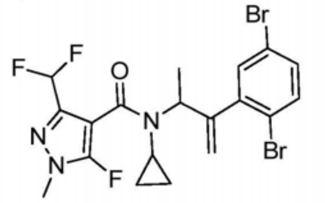
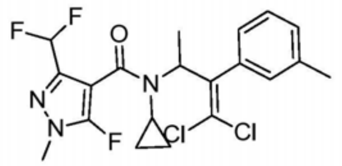
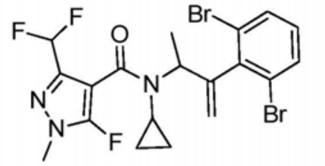
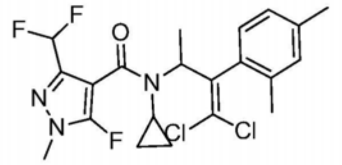
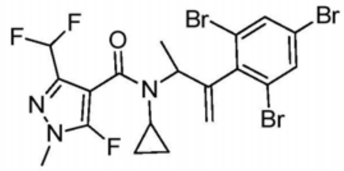
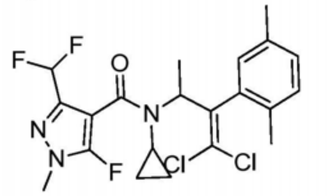
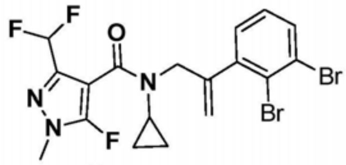
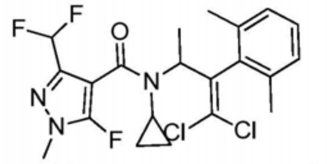
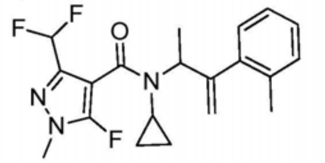
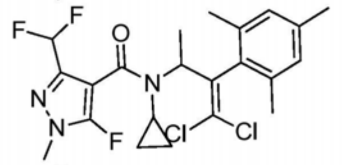
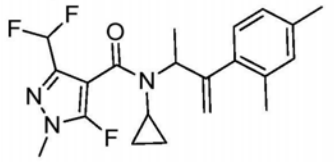
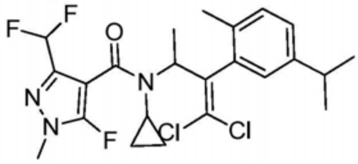
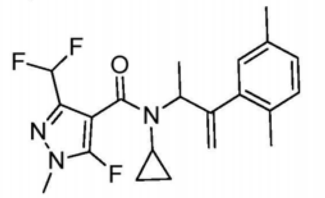
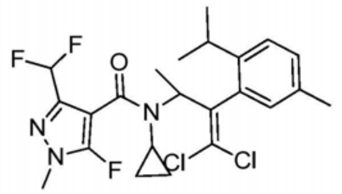
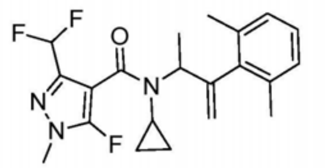
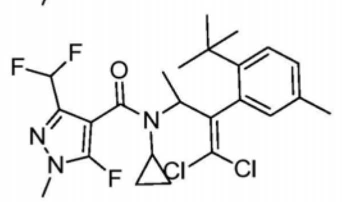
178 

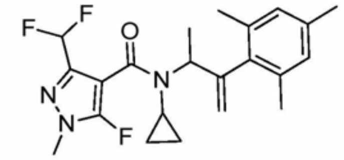
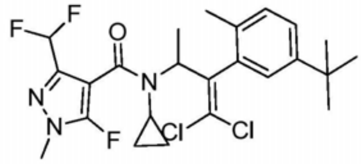
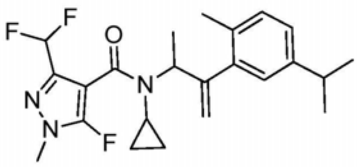
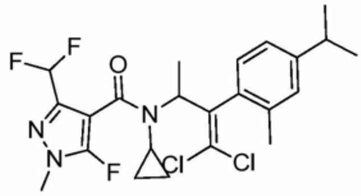
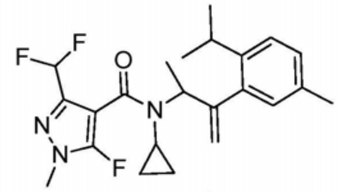
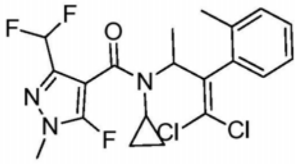
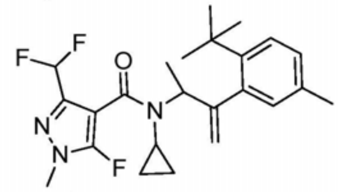
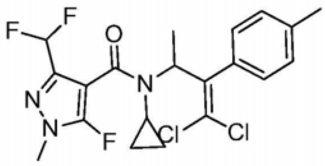
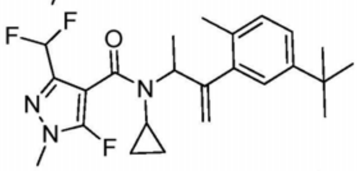
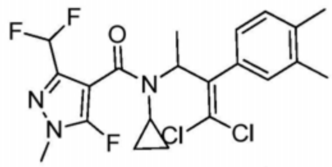
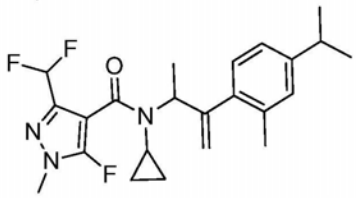
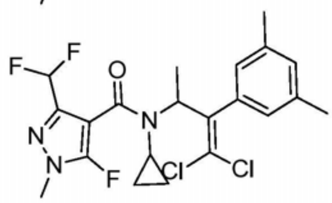
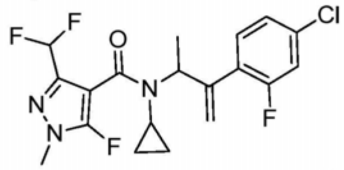
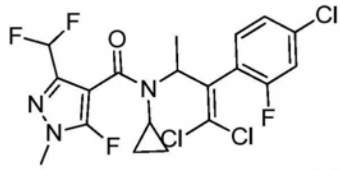
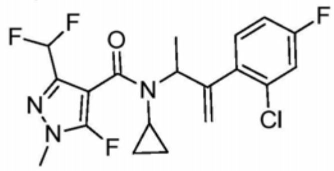
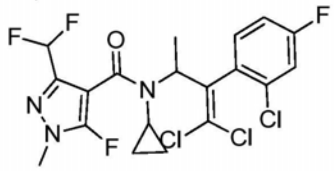
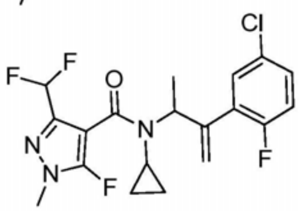
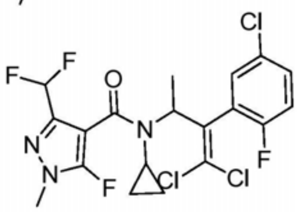
179 

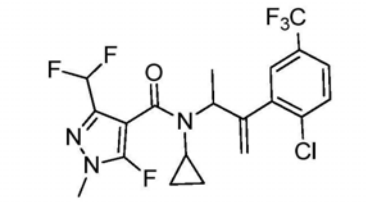
180 

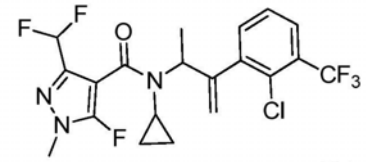
181 

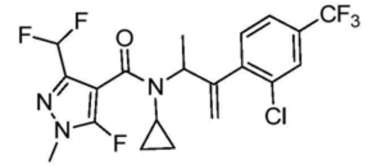
73		182	
74		183	
75		184	
76		185	
77		186	
78		187	
79		188	
80		189	
81		190	

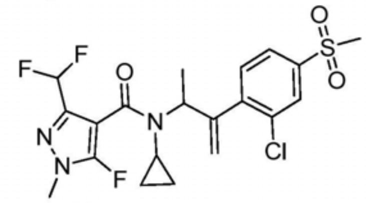
82		191	
83		192	
84		193	
85		194	
86		195	
87		196	
88		197	
89		198	
90		199	

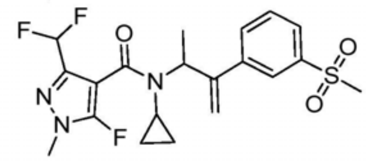
91		200	
92		201	
93		202	
94		203	
95		204	
96		205	
97		206	
98		207	
99		208	

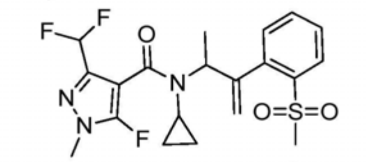
100 

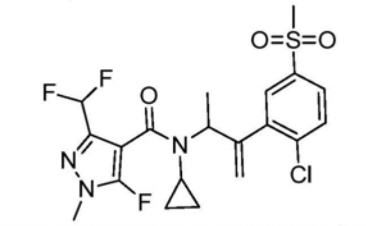
101 

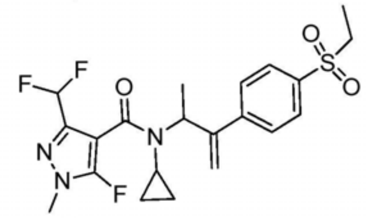
102 

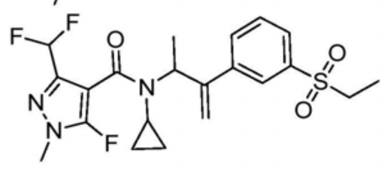
103 

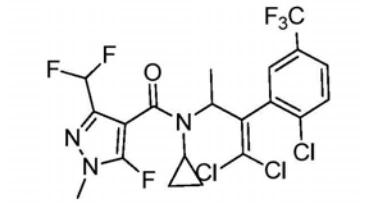
104 

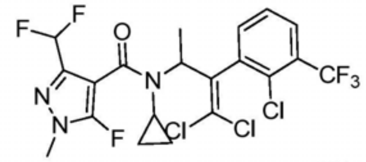
105 

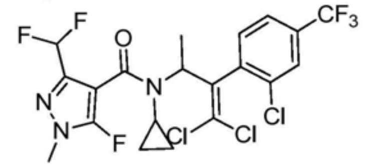
106 

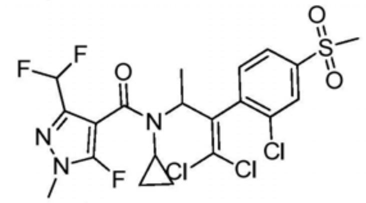
107 

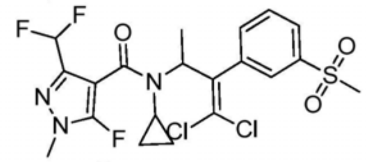
108 

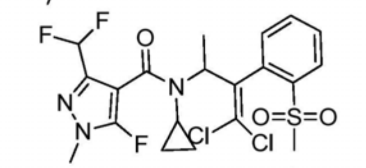
209 

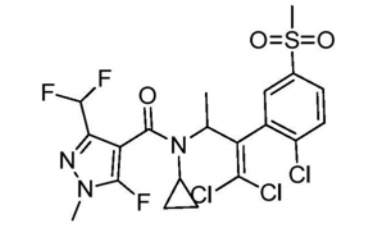
210 

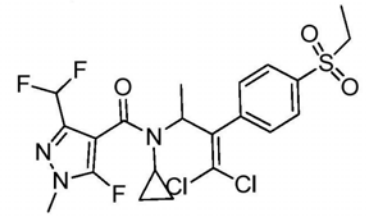
211 

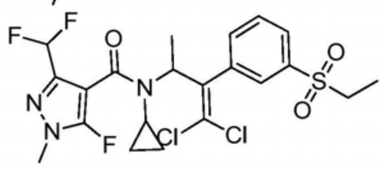
212 

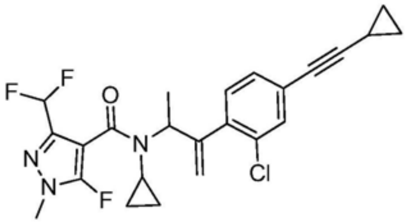
213 

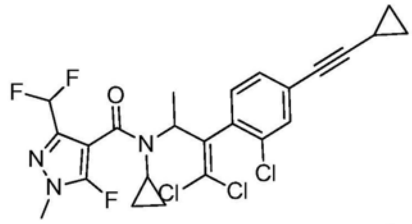
214 

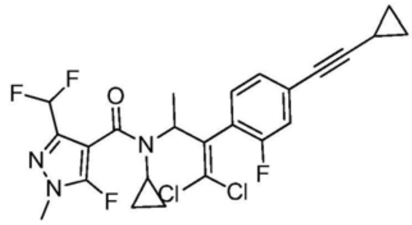
215 

216 

217 

109 

218 

219 

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6.权利要求1-5中任意一项所述的化合物作为琥珀酸脱氢酶抑制剂在农药中的应用。

7.权利要求1-5中任意一项所述的化合物在防治植物真菌病害中的应用。

8.一种杀菌剂，其特征在于，该杀菌剂中含有辅料和杀菌有效量的活性成分，所述活性成分选自权利要求1-5中任意一项所述的化合物中的至少一种。

9.根据权利要求8所述的杀菌剂，其中，所述杀菌剂的剂型选自乳油、悬浮剂、可湿性粉剂、粉剂、粒剂、水剂、毒饵、母液和母粉中的至少一种。

10.权利要求8或9所述的杀菌剂在防治植物真菌病害中的应用；

优选地，所述植物真菌病害选自小麦白粉病、黄瓜白粉病、小麦赤霉病、水稻恶苗病、油菜菌核病、玉米小斑病、小麦条锈病和黄瓜灰霉病中的至少一种。

一种突烯酰胺类化合物及其应用、一种杀菌剂及其应用

技术领域

[0001] 本发明涉及农药新化合物领域，具体涉及一种突烯酰胺类化合物及其应用、一种杀菌剂及其应用。

背景技术

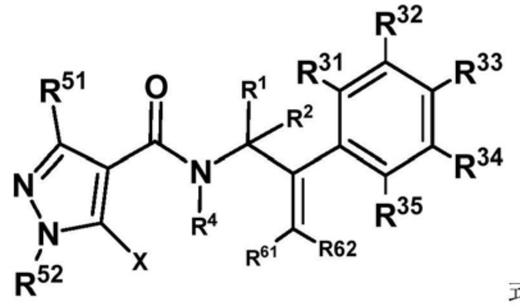
[0002] 琥珀酸脱氢酶抑制剂(SDHIs，succinate dehydrogenase inhibitors)类杀菌剂是通过作用于病原菌线粒体呼吸电子传递链上的复合体II(也称琥珀酸脱氢酶或琥珀酸泛醌还原酶)，干扰呼吸电子传递链上琥珀酸脱氢酶来抑制线粒体功能，阻止其产生能量，抑制病原菌生长，最终导致其死亡，以达到防治病害的目的。

[0003] 琥珀酸脱氢酶抑制剂类杀菌剂因其高效、广谱的杀菌活性和相对较低的抗性风险，近年来已经成为最有发展前景的一类杀菌剂，受到世界各大农药公司关注。

发明内容

[0004] 本发明的目的是为了克服现有技术存在的前述缺陷，提供一类新的具有琥珀酸脱氢酶抑制效果的化合物。

[0005] 为了实现上述目的，本发明的第一方面提供一种突烯酰胺类化合物，该化合物具有式(I)所示的结构，

[0006] 

式（I），

[0007] 其中，在式(I)中，

[0008] X选自H、F、Cl；

[0009] R^1和R^2各自独立地选自H、卤素、C_{1-6}的烷基；或者R^1和R^2与它们共有的碳原子一起形成环丙基、环戊基或环己基；

[0010] R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、卤素、取代或未取代的C_{1-6}的烷基、C_{1-6}的烷氧基、氰基、C_{1-6}的烷基-磺酰基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的C_{2-4}的炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基各自独立地选自卤素、C_{1-6}的烷基、C_{1-6}的烷氧基、C_{1-6}的烷基-磺酰基、苯基、苯氧基、苄氧基、由1-3个卤素取代的C_{1-3}的烷基、由1-3个卤素取代的苯基、环丙基取代的C_{2-4}的炔基中的至少一种；

[0011] R^4选自C_{1-4}的烷基、C_{1-4}的烷氧基、氰基、三氟甲基、丙炔基；

[0012] R^{51}选自由1-3个卤素取代的C_{1-3}的烷基；R^{52}选自C_{1-4}的烷基。

[0013] R^{61}和R^{62}各自独立地选自H、F、Cl、Br。

[0014] 本发明的第二方面提供前述化合物作为琥珀酸脱氢酶抑制剂在农药中的应用。

[0015] 本发明的第三方面提供前述化合物在防治植物真菌病害中的应用。

[0016] 本发明的第四方面提供一种杀菌剂，该杀菌剂中含有辅料和杀菌有效量的活性成分，所述活性成分选自前述化合物中的至少一种。

[0017] 本发明的第五方面提供前述杀菌剂在防治植物真菌病害中的应用。

[0018] 本发明提供的突烯酰胺类化合物对于琥珀酸脱氢酶具有较高抑制活性，且对于真菌病害也有较高的防效，特别是对小麦白粉病、黄瓜白粉病、小麦赤霉病、水稻恶苗病、油菜菌核病、玉米小斑病、小麦条锈病、黄瓜灰霉病等具有优异的防效。

具体实施方式

[0019] 在本文中所披露的范围的端点和任何值都不限于该精确的范围或值，这些范围或值应当理解为包含接近这些范围或值的值。对于数值范围来说，各个范围的端点值之间、各个范围的端点值和单独的点值之间，以及单独的点值之间可以彼此组合而得到一个或多个新的数值范围，这些数值范围应被视为在本文中具体公开。

[0020] 以下先对本发明中涉及的部分术语进行解释，在没有相反说明的情况下，以下解释对于本发明的全文相同术语均有效，并且，为了避免重复，本发明在后文中也不再对相同的术语进行重复的解释，本领域技术人员不应理解为对本发明的限制。

[0021] “卤素”包括氟、氯、溴、碘。

[0022] “C_{1-6}的烷基”包括碳原子总数为1-6的烷基，包括直链烷基、支链烷基和环烷基，例如可以为碳原子总数为1、2、3、4、5、6的直链烷基、支链烷基或者环烷基，例如可以为甲基、乙基、正丙基、异丙基、正丁基、异丁基、叔丁基、正戊基、异戊基、正己基、环丙基、甲基环丙基、乙基环丙基、环戊基、甲基环戊基、环己基等。针对“C_{1-4}的烷基”、“C_{1-3}的烷基”具有与此相似的解释，所不同的是，碳原子总数不同而已。

[0023] “C_{1-6}的烷氧基”包括碳原子总数为1-6的烷氧基，包括直链烷氧基、支链烷氧基和环烷氧基，例如可以为碳原子总数为1、2、3、4、5、6的直链烷氧基、支链烷氧基或者环烷氧基，例如可以为甲氧基、乙氧基、正丙氧基、异丙氧基、正丁氧基、异丁氧基、叔丁氧基、正戊氧基、异戊氧基、正己氧基、环丙氧基、甲基环丙氧基、乙基环丙氧基、环戊氧基、甲基环戊氧基、环己氧基等。针对“C_{1-4}的烷氧基”、“C_{1-3}的烷氧基”具有与此相似的解释，所不同的是，碳原子总数不同而已。

[0024] “C_{1-6}的烷基-磺酰基”表示$-SO_2-R_1$所示的基团，并且其中的R_1为C_{1-6}的烷基。“C_{1-3}的烷基-磺酰基”等具有与此相似的解释。

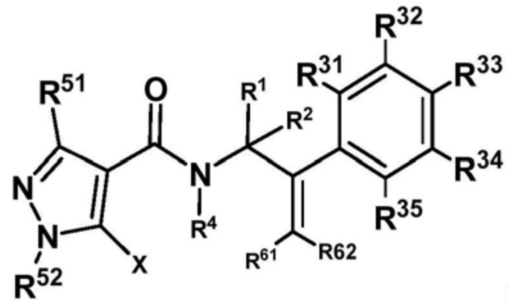
[0025] “取代或未取代的苯基”表示对苯基上的具体取代基的数目没有限制，可以在苯基上能够被取代的位置进行取代，并且，也可以为没有取代基的情况，也即为苯基。针对“取代或未取代的苯氧基”、“取代或未取代的苄氧基”、“取代或未取代的C_{2-4}的炔基”具有与此相似的解释。

[0026] “由1-3个卤素取代的C_{1-3}的烷基”包括碳原子总数为1-3的烷基，并且烷基上的1-3个H原子被卤素取代，包括直链烷基、支链烷基和环烷基，例如可以为碳原子总数为1、2、3的直链烷基、支链烷基或者环烷基，例如可以为由1-3个卤素取代的甲基、由1-3个卤素取代的

乙基、由1-3个卤素取代的正丙基、由1-3个卤素取代的异丙基、由1-3个卤素取代的环丙基等。

[0027] “由1-3个卤素取代的苯基”包括苯基上的1-3个H原子被卤素取代的基团。

[0028] 如前所述，本发明的第一方面提供了一种突烯酰胺类化合物，该化合物具有式(I)所示的结构，

[0029] 

式（I），

[0030] 其中，在式(I)中，

[0031] X选自H、F、Cl；

[0032] R^1和R^2各自独立地选自H、卤素、C_{1-6}的烷基；或者R^1和R^2与它们共有的碳原子一起形成环丙基、环戊基或环己基；

[0033] R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、卤素、取代或未取代的C_{1-6}的烷基、C_{1-6}的烷氧基、氰基、C_{1-6}的烷基-磺酰基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的C_{2-4}的炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基各自独立地选自卤素、C_{1-6}的烷基、C_{1-6}的烷氧基、C_{1-6}的烷基-磺酰基、苯基、苯氧基、苄氧基、由1-3个卤素取代的C_{1-3}的烷基、由1-3个卤素取代的苯基、环丙基取代的C_{2-4}的炔基中的至少一种；

[0034] R^4选自C_{1-4}的烷基、C_{1-4}的烷氧基、氰基、三氟甲基、丙炔基；

[0035] R^{51}选自由1-3个卤素取代的C_{1-3}的烷基；R^{52}选自C_{1-4}的烷基。

[0036] R^{61}和R^{62}各自独立地选自H、F、Cl、Br。

[0037] 优选情况下，在式(I)中，X选自H、F。

[0038] 优选情况下，在式(I)中，R^1和R^2各自独立地选自H、F、Cl、Br、C_{1-3}的烷基；更优选地，R^1和R^2各自独立地选自H、F、Cl、Br、甲基、乙基、正丙基、异丙基、环丙基；进一步优选地，R^1和R^2各自独立地选自H、甲基、乙基、正丙基。

[0039] 优选地，在式(I)中，R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、卤素、取代或未取代的C_{1-4}的烷基、C_{1-4}的烷氧基、氰基、C_{1-3}的烷基-磺酰基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的乙炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基各自独立地选自卤素、C_{1-4}的烷基、C_{1-4}的烷氧基、C_{1-3}的烷基-磺酰基、苯基、苯氧基、苄氧基、由1-3个卤素取代的C_{1-3}的烷基、由1-3个卤素取代的苯基、环丙基取代的乙炔基中的至少一种；更优选地，R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、F、Cl、Br、甲基、乙基、正丙基、异丙基、环丙基、正丁基、异丁基、叔丁基、甲氧基、乙氧基、三氟甲基、正丙氧基、异丙氧基、环丙氧基、正丁氧基、异丁氧基、叔丁氧基、氰基、甲基磺酰基、乙基磺酰基、正丙基磺酰基、异丙基磺酰基、环丙基磺酰基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的乙炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基各自独立

地选自F、Cl、Br、甲基、乙基、正丙基、异丙基、环丙基、正丁基、叔丁基、甲氧基、乙氧基、正丙氧基、异丙氧基、环丙氧基、环丙基取代的乙炔基、甲基磺酰基、乙基磺酰基、正丙基磺酰基、异丙基磺酰基、环丙基磺酰基、苯基、苯氧基、苄氧基、由1-3个选自F和/或Cl的卤素取代的C_{1-3}的烷基、由1-3个选自F和/或Cl的卤素取代的苯基中的至少一种；进一步优选地，R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、F、Cl、Br、甲基、乙基、正丙基、异丙基、正丁基、叔丁基、甲氧基、三氟甲基、C_{1-3}的烷基-磺酰基、乙氧基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的乙炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基选自F、Cl、Br、甲基、乙基、正丙基、环丙基、异丙基、正丁基、叔丁基、环丙基取代的乙炔基、C_{1-3}的烷基-磺酰基中的至少一种。

[0040] 优选地，在式(I)中，R^4选自C_{1-3}的烷基、C_{1-3}的烷氧基；更优选地，R^4选自甲基、乙基、正丙基、异丙基、环丙基、甲氧基、乙氧基、正丙氧基、异丙氧基；进一步优选地，R^4选自环丙基、甲氧基、乙氧基。

[0041] 优选地，在式(I)中，R^{51}选自二氟甲基、三氟甲基；R^{52}选自甲基、乙基、正丙基、异丙基；更优选地，R^{51}选自二氟甲基、三氟甲基；R^{52}选自甲基、乙基；特别优选地，R^{51}为二氟甲基；R^{52}为甲基。

[0042] 优选地，在式(I)中，R^{61}和R^{62}各自独立地选自H、F、Cl、Br。

[0043] 以下针对本发明所述的突烯酰胺类化合物提供几种特别优选的具体实施方式。

[0044] 具体实施方式1：

[0045] 在式(I)中，

[0046] X选自H、F、Cl；

[0047] R^1和R^2各自独立地选自H、F、Cl、Br、C_{1-3}的烷基；

[0048] R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、卤素、取代或未取代的C_{1-4}的烷基、C_{1-4}的烷氧基、氰基、C_{1-3}的烷基-磺酰基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的乙炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基各自独立地选自卤素、C_{1-4}的烷基、C_{1-4}的烷氧基、C_{1-3}的烷基-磺酰基、苯基、苯氧基、苄氧基、由1-3个卤素取代的C_{1-3}的烷基、由1-3个卤素取代的苯基、环丙基取代的乙炔基中的至少一种；

[0049] R^4选自C_{1-3}的烷基、C_{1-3}的烷氧基、丙炔基；

[0050] R^{51}选自二氟甲基、三氟甲基；R^{52}选自甲基、乙基、正丙基、异丙基；

[0051] R^{61}和R^{62}各自独立地选自H、F、Cl、Br。

[0052] 具体实施方式2：

[0053] 在式(I)中，

[0054] X选自H、F、Cl；

[0055] R^1和R^2各自独立地选自H、F、Cl、Br、甲基、乙基、正丙基、异丙基、环丙基；

[0056] R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、F、Cl、Br、甲基、乙基、正丙基、异丙基、环丙基、正丁基、异丁基、叔丁基、甲氧基、乙氧基、三氟甲基、正丙氧基、异丙氧基、环丙氧基、正丁氧基、异丁氧基、叔丁氧基、氰基、甲基磺酰基、乙基磺酰基、正丙基磺酰基、异丙基磺酰基、环丙基磺酰基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的乙炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基各自独立地选自F、Cl、Br、甲基、乙基、正丙基、异丙基、环丙基、正丁基、叔丁基、甲氧基、乙氧基、正丙氧基、异丙氧

基、环丙氧基、环丙基取代的乙炔基、甲基磺酰基、乙基磺酰基、正丙基磺酰基、异丙基磺酰基、环丙基磺酰基、苯基、苯氧基、苄氧基、由1-3个选自F和/或Cl的卤素取代的C_{1-3}的烷基、由1-3个选自F和/或Cl的卤素取代的苯基中的至少一种；

[0057] R^4选自甲基、乙基、正丙基、异丙基、环丙基、甲氧基、乙氧基、正丙氧基、异丙氧基、丙炔基；

[0058] R^{51}选自二氟甲基、三氟甲基；R^{52}选自甲基、乙基；

[0059] R^{61}和R^{62}各自独立地选自H、F、Cl、Br。

[0060] 具体实施方式3：

[0061] 在式(I)中，

[0062] X选自H、F；

[0063] R^1和R^2各自独立地选自H、甲基、乙基、正丙基；

[0064] R^{31}、R^{32}、R^{33}、R^{34}和R^{35}各自独立地选自H、F、Cl、Br、甲基、乙基、正丙基、异丙基、正丁基、叔丁基、甲氧基、三氟甲基、C_{1-3}的烷基-磺酰基、乙氧基、取代或未取代的苯基、取代或未取代的苯氧基、取代或未取代的苄氧基、取代或未取代的乙炔基；R^{31}、R^{32}、R^{33}、R^{34}和R^{35}上任选存在的取代基选自F、Cl、Br、甲基、乙基、正丙基、环丙基、异丙基、正丁基、叔丁基、环丙基取代的乙炔基、C_{1-3}的烷基-磺酰基中的至少一种；

[0065] R^4选自环丙基、甲氧基、乙氧基、丙炔基；

[0066] R^{51}为二氟甲基；R^{52}为甲基；

[0067] R^{61}和R^{62}各自独立地选自H、F、Cl、Br。

[0068] 具体实施方式4：

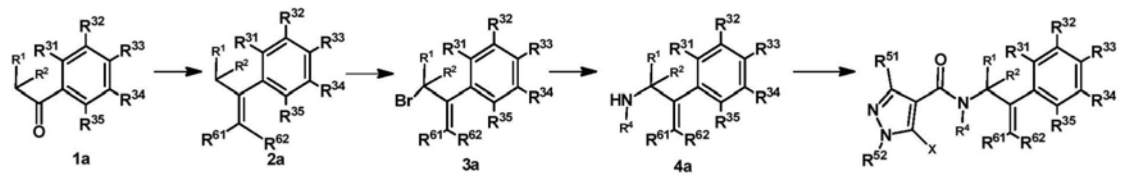
[0069] 式(I)所示的化合物选自化合物1至化合物219中的至少一种。

[0070] 本发明提供的前述化合物对于琥珀酸脱氢酶均具有明显较高抑制活性。是良好的琥珀酸脱氢酶抑制剂。

[0071] 本发明对前述突烯酰胺类化合物的具体制备方法没有特别的要求，本领域技术人员可以根据本发明提供的结构式结合有机化学领域的已知合成方法，选择合适的合成路线制备获得。本发明的下文和实例中示例性地提供了几种具体的合成方法，本领域技术人员不应理解为对本发明的限制。

[0072] 示例性地，本发明所述式(I)所示结构的化合物采用包括如下路线的方法制备得到：

[0073]



[0074] 本发明提供的前述合成路线中可以包括一些本领域公知的后处理手段，以提高目标产物的纯度等。

[0075] 如前所述，本发明的第二方面提供了前述化合物作为琥珀酸脱氢酶抑制剂在农药中的应用。

[0076] 如前所述，本发明的第三方面提供了前述化合物在防治植物真菌病害中的应用。

[0077] 如前所述，本发明的第四方面提供了一种杀菌剂，该杀菌剂中含有辅料和杀菌有

效量的活性成分，所述活性成分选自前述化合物中的至少一种。

[0078] 优选情况下，在所述杀菌剂中，所述活性成分的含量为5-99.99重量％。

[0079] 优选地，所述杀菌剂的剂型选自乳油、悬浮剂、可湿性粉剂、粉剂、粒剂、水剂、毒饵、母液和母粉中的至少一种。

[0080] 本发明对所述杀菌剂中的辅料的具体种类没有特别的要求，本领域技术人员可以根据剂型选择本领域已知的相应辅料制备本发明的所述杀菌剂，本发明在此不再详述，本领域技术人员不应理解为对本发明的限制。

[0081] 如前所述，本发明的第五方面提供了前述杀菌剂在防治植物真菌病害中的应用。

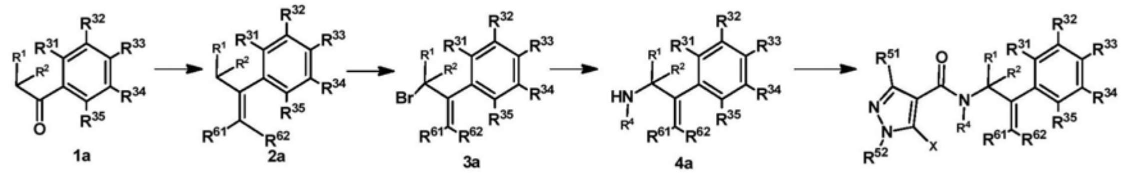
[0082] 优选地，所述植物真菌病害选自小麦白粉病、黄瓜白粉病、小麦赤霉病、水稻恶苗病、油菜菌核病、玉米小斑病、小麦条锈病和黄瓜灰霉病中的至少一种。

[0083] 以下将通过实例对本发明进行详细描述。以下实例中，在没有特别说明的情况下，使用的原料均为普通市售品。

[0084] 在没有特别说明的情况下，以下实例中的室温表示25±2℃。

[0085] 在没有特别说明的情况下，以下实例中的目标化合物采用如下的合成路线制备获得。具体地：

[0086]



[0087] R_{61}＝R_{62}＝H时，合成方法如下：

[0088] 1、中间体2a的合成

[0089] 取化合物1a(80mmol)于250ml烧杯中，加入120ml的THF，冰浴下缓慢加入叔丁醇钾(80mmol)，随后室温反应1h，在冰浴下缓慢加入各种取代的酮(40mmol)，待加完后，升温至室温，1h后TLC监测反应，待原料反应完成后，加水淬灭反应，并用乙酸乙酯进行萃取，再水洗3次，饱和食盐水洗3次，硅胶拌样，柱层析分离得油状化合物，即为中间体2a。

[0090] 2、中间体3a的合成

[0091] 将中间体2a(1eq.)溶于三氯甲烷中，加入NBS(2eq.)、对甲苯磺酸(0.5eq.)，加热至回流2h左右，TLC监测反应，待反应完成后，停止加热，冷却至室温后，加水，用二氯甲烷萃取，分别用水、饱和食盐水洗3次，干燥，脱溶剂，得溴化的中间体3a，无需纯化。

[0092] 3、中间体4a的合成

[0093] 取溴化的中间体3a(1eq.)于乙腈中，加入碳酸钾(3eq.)，然后冰浴下加入各种取代的胺(2.2eq.)，待加完后室温反应24h，TLC监测反应，待反应完成，则加水猝灭反应，乙酸乙酯萃取，再分别用水、饱和食盐水洗3次，干燥脱溶得胺化的中间体4a，无需纯化。

[0094] 4、目标产物的合成

[0095] 取胺化的中间体4a(1eq.)于二氯甲烷中，加入三乙胺(2eq.)，最后缓慢加入吡唑酰氯(1.5eq.)，TLC监测反应，待反应完成，加水猝灭反应，二氯甲烷萃取，分别用水和饱和食盐水洗3次，硅胶拌样，柱层析分离，得到产物。

[0096] R_{61}＝R_{62}＝F、Cl、Br时，合成方法如下：

[0097] 1、中间体2a的合成

[0098] 取三苯基膦(4eq.)和取代的酮(1eq.)于合适大小的茄形瓶中，加入适量DCM，冰浴下缓慢滴加三氯溴甲烷(2eq.)，30min后监测反应是否完成，若反应完成，则加水猝灭反应，DCM萃取，再水洗2-3次，饱和食盐水洗2-3次，硅胶拌样，柱层析分离提纯，得油状化合物，即为中间体2a。

[0099] 2、中间体3a的合成

[0100] 将中间体2a(1eq.)溶于三氯甲烷中，加入NBS(2eq.)、对甲苯磺酸(0.5eq.)，加热至回流2h左右，TLC监测反应是否完成，待反应完成后，停止加热，冷却至室温后，加水，用二氯甲烷萃取，分别用水、饱和食盐水洗2-3次，干燥，脱溶得溴化中间体3a，无需纯化。

[0101] 3、中间体4a的合成

[0102] 取溴化中间体3a(1eq.)于适量乙腈中，加入碳酸钾(3eq.)，然后冰浴下加入各种取代的胺(2.2eq.)，待加完后室温反应24h，TLC监测反应是否完全，待反应完成，则加水猝灭反应，乙酸乙酯萃取，再分别用水、饱和食盐水洗2-3次，干燥脱溶得胺化中间体4a，无需纯化。

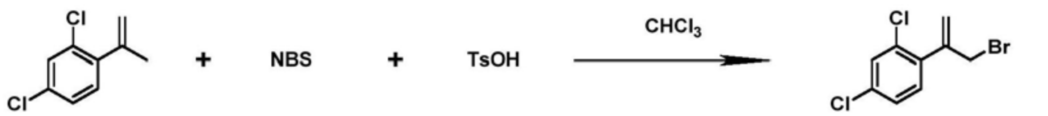
[0103] 4、目标产物的合成

[0104] 取胺化中间体4a(1eq.)于适量二氯甲烷中，加入三乙胺(2eq.)，最后缓慢加入吡唑酰氯(1.5eq.)，若大量反应则冰浴下缓慢加入，少量可以直接室温加入，TLC监测反应是否完成，待反应完成，加水猝灭反应，二氯甲烷萃取，分别用水和饱和食盐水洗2-3次，若少量则直接硅胶拌样，柱层析分离，若大量，可以用乙醇和乙酸乙酯进行重结晶，产物为白色固体。

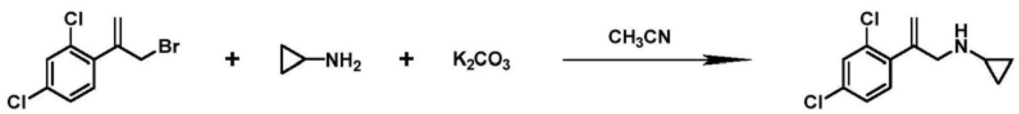
[0105] 以下示例性地提供化合物1的具体合成方法：

[0106] 

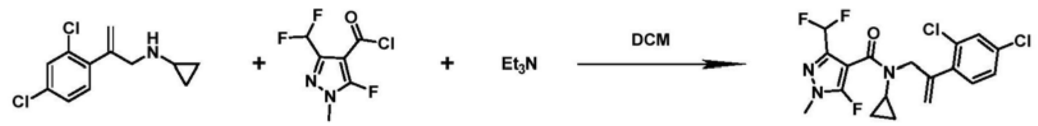
[0107] 取三苯基甲基溴化磷(80mmol，2eq.)于250ml茄型瓶中，加入120ml THF，冰浴下缓慢加入叔丁醇钾(80mmol，2eq.)，随后室温反应1h后，在冰浴下缓慢加入2,4-二氯苯乙酮(40mmol，1eq.)，待加完后，升温至室温，1h后TLC监测反应完成，待原料反应完成后，加水淬灭反应，并用乙酸乙酯进行萃取，再水洗3次，饱和食盐水洗3次，干燥脱溶得黄色油状化合物，此时包含产物和三苯基氧膦，分离，直接硅胶拌样，柱层析分离，洗脱剂为石油醚。

[0108] 

[0109] 将2,4-二氯苯乙烯(1eq.)溶于三氯甲烷中，加入NBS(1.05eq.)、对甲苯磺酸(0.3eq.)，70℃加热至回流2h，TLC监测反应完成，待反应完成后，停止加热，冷却至室温后，加水，用二氯甲烷萃取，分别用水、饱和食盐水洗2次，干燥，脱溶得溴化中间体，无需纯化。

[0110] 

[0111] 取溴化中间体(1eq.)于适量乙腈中，加入碳酸钾(3eq.)，然后冰浴下加入环丙胺(2.2eq.)，待加完后室温反应24h，TLC监测反应完全，待反应完成，则加水猝灭反应，乙酸乙酯萃取，再分别用水、饱和食盐水洗3次，干燥脱溶得胺化产物，无需纯化。

[0112] 

[0113] 取胺化中间体(1eq.)于适量二氯甲烷中，加入三乙胺(2eq.)，最后缓慢加入含氟吡唑酰氯(1.5eq.)，TLC监测反应完成，待反应完成，加水猝灭反应，二氯甲烷萃取，分别用水和饱和食盐水洗3次，直接硅胶拌样，柱层析分离(洗脱剂用石油醚:乙酸乙酯＝8:1)，产物为白色固体。即为化合物1。

[0114] 本发明的目标化合物的核磁数据列于表1中。

[0115] 表1

[0116]

化合物编号	核磁
1	^{1}H NMR (600 MHz, DMSO-d_6) δ 7.61 (s, 1H), 7.40 (d, J = 8.3 Hz, 1H), 7.29 (s, 1H), 6.83 (t, J = 53.5 Hz, 1H), 5.43 (s, 1H), 5.18 (s,

[0117]

	1H), 4.37 (s, 2H), 3.73 (s, 3H), 2.73 – 2.55 (m, 1H), 0.83 – 0.61 (m, 2H), 0.59 – 0.42 (m, 2H).
2	^{1}H NMR (500 MHz, CDCl3) δ 7.36 – 7.31 (m, 1H), 7.31 – 7.25 (m, 2H), 7.17 (t, *J* = 57.3 Hz, 1H), 5.30 (s, 1H), 5.25 (s, 1H), 4.40 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.54 (m, 2H).
3	^{1}H NMR (500 MHz, CDCl3) δ 7.66 – 7.61 (m, 1H), 7.46 (dd, *J* = 4.8, 3.0 Hz, 1H), 7.37 – 7.30 (m, 2H), 7.17 (t, *J* = 57.3 Hz, 1H), 5.23 (s, 1H), 5.16 (s, 1H), 4.39 (s, 2H), 3.96 (s, 3H), 3.74 – 3.63 (m, 1H), 0.76 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
4	^{1}H NMR (500 MHz, CDCl3) δ 7.26 (t, *J* = 57.3 Hz, 1H), 7.23 – 7.20 (m, 2H), 7.15 – 7.04 (m, 2H), 5.26 (s, 1H), 5.18 (s, 1H), 4.36 (s, 2H), 3.96 (s, 3H), 3.74 – 3.62 (m, 1H), 2.38 (s, 3H), 0.75 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
5	^{1}H NMR (500 MHz, CDCl3) δ 7.57 – 7.51 (m, 2H), 7.36 – 7.28 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.30 (s, 1H), 5.20 (s, 1H), 4.37 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 0.73 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
6	^{1}H NMR (500 MHz, CDCl3) δ 7.36 – 7.27 (m, 1H), 7.27 – 7.23 (m, 2H), 7.22 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.11 (m, 1H), 5.24 (s, 1H), 5.17 (s, 1H), 4.31 (s, 2H), 3.96 (s, 3H), 3.74 – 3.59 (m, 1H), 2.35 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
7	^{1}H NMR (500 MHz, CDCl3) δ 7.46 (dd, *J* = 6.3, 1.6 Hz, 1H), 7.42 – 7.32 (m, 2H), 7.28 (ddd, *J* = 7.5, 6.4, 1.8 Hz, 1H), 7.17 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.18 (s, 1H), 4.18 (s, 2H), 3.96 (s, 3H), 3.72 – 3.64 (m, 1H), 0.73 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
8	^{1}H NMR (500 MHz, CDCl3) δ 7.40 (dd, *J* = 6.9, 2.7 Hz, 1H), 7.36 – 7.29 (m, 1H), 7.28 (s, 1H), 7.17 (t, *J* = 57.3 Hz, 1H), 5.28 (s, 1H), 5.24 (s, 1H), 4.18 (s, 2H), 3.96 (s, 3H), 3.73 – 3.63 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.54 (m, 2H).
9	^{1}H NMR (500 MHz, CDCl3) δ 7.44 – 7.27 (m, 5H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.18 (s, 1H), 4.36 (s, 2H), 3.96 (s, 3H), 3.72 – 3.64 (m, 1H), 0.73 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
10	^{1}H NMR (500 MHz, CDCl3) δ 7.53 – 7.40 (m, 2H), 7.24 (t, *J* = 57.3 Hz, 1H), 7.15 – 7.11 (m, 1H), 5.30 (s, 1H), 5.20 (s, 1H), 4.37 (s, 2H), 3.96 (s, 3H), 3.74 – 3.61 (m, 1H), 0.75 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
11	^{1}H NMR (500 MHz, CDCl3) δ 7.60 – 7.22 (m, 3H), 7.18 (t, *J* = 57.3 Hz, 1H), 5.30 (s, 1H), 5.20 (s, 1H), 4.37 (s, 2H), 3.96 (s, 3H), 3.73 – 3.62 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
12	^{1}H NMR (500 MHz, CDCl3) δ 7.24 (t, *J* = 57.3 Hz, 1H), 7.20 – 7.05 (m, 3H), 5.28 (s, 1H), 5.21 (s, 1H), 4.46 (s, 2H), 3.96 (s, 3H), 3.73 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
13	^{1}H NMR (500 MHz, CDCl3) δ 7.56 (d, *J* = 4.9 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.02 (d, *J* = 8.1 Hz, 1H), 5.28 (s, 1H), 5.22 (s, 1H), 4.18 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
14	^{1}H NMR (500 MHz, CDCl3) δ 7.41 – 7.35 (m, 3H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.28 (s, 1H), 5.24 (s, 1H), 4.18 (s, 2H), 3.96 (s, 3H), 3.71 – 3.65 (m, 1H), 0.73 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
15	^{1}H NMR (500 MHz, CDCl3) δ 7.87 – 7.78 (m, 2H), 7.55 (d, *J* = 7.8 Hz, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.18 (s, 1H), 4.36 (s, 2H), 3.96 (s, 3H), 3.73 – 3.62 (m, 1H), 3.18 (s, 3H), 0.73 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
16	^{1}H NMR (500 MHz, CDCl3) δ 7.41 – 7.35 (m, 3H), 7.35 – 7.30 (m, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.30 (s, 1H), 5.20 (s, 1H), 4.37 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.73 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
17	^{1}H NMR (500 MHz, CDCl3) δ 7.36 – 7.27 (m, 4H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.18 (s, 1H), 4.36 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.73 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
18	^{1}H NMR (500 MHz, CDCl3) δ 7.41 – 7.33 (m, 3H), 7.22 (t, *J* = 57.3 Hz, 1H), 5.23 (s, 1H), 5.16 (s, 1H), 4.42 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
19	^{1}H NMR (500 MHz, CDCl3) δ 7.25 (s, 2H), 7.17 (t, *J* = 57.3 Hz, 1H), 5.23 (s, 1H), 5.16 (s, 1H), 4.42 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
20	^{1}H NMR (500 MHz, CDCl3) δ 7.55 (ddd, *J* = 7.5, 5.0, 1.6 Hz, 1H), 7.45 – 7.38 (m, 1H), 7.24 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.09 (m, 2H), 5.23 (s, 1H), 5.19 (s, 1H), 4.38 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
21	^{1}H NMR (500 MHz, CDCl3) δ 7.38 – 7.34 (m, 1H), 7.24 (t, *J* = 57.3 Hz, 1H), 7.20 – 7.07 (m, 3H), 5.30 (s, 1H), 5.20 (s, 1H), 4.37 (s, 2H), 3.96 (s, 3H), 3.72 – 3.62 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
22	^{1}H NMR (500 MHz, CDCl3) δ 7.44 (dd, *J* = 8.9, 5.0 Hz, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.05 (dd, *J* = 9.0, 8.0 Hz, 2H), 5.26 (s, 1H), 5.18 (s, 1H), 4.36 (s, 2H), 3.96 (s, 3H), 3.72 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
23	^{1}H NMR (500 MHz, CDCl3) δ 7.26 (t, *J* = 57.3 Hz, 1H), 7.23 – 7.10 (m, 1H), 6.88 – 6.79 (m, 2H), 5.25 (s, 1H), 5.18 (s, 1H), 4.38 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
24	^{1}H NMR (500 MHz, CDCl3) δ 7.20 (t, *J* = 57.3 Hz, 1H), 7.19 – 7.10 (m, 3H), 5.28 (s, 1H), 5.22 (s, 1H), 4.40 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
25	^{1}H NMR (500 MHz, CDCl3) δ 7.42 (tt, *J* = 7.9, 5.1 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.00 (td, *J* = 7.5, 0.9 Hz, 2H), 5.27 (s, 1H), 5.20 (s, 1H), 4.39 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
26	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 6.67 (ddd, *J* = 8.3, 7.4, 0.9 Hz, 2H), 5.27 (s, 1H), 5.20 (s, 1H), 4.39 (s, 2H), 3.96 (s, 3H), 3.72 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
27	^{1}H NMR (500 MHz, CDCl3) δ 7.51 – 7.42 (m, 4H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.18 (s, 1H), 4.36 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
28	^{1}H NMR (500 MHz, CDCl3) δ 7.66 (d, *J* = 1.9 Hz, 1H), 7.44 (dd, *J* = 9.2, 1.9 Hz, 1H), 7.32 (d, *J* = 28.5 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.23 (s, 1H), 5.16 (s, 1H), 4.39 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
29	^{1}H NMR (500 MHz, CDCl3) δ 7.59 – 7.48 (m, 3H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.25 (s, 1H), 5.20 (s, 1H), 4.39 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
30	^{1}H NMR (500 MHz, CDCl3) δ 7.49 (d, *J* = 8.1 Hz, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.08 (t, *J* = 8.2 Hz, 1H), 5.28 (s, 1H), 5.20 (s, 1H), 4.17 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
31	^{1}H NMR (500 MHz, CDCl3) δ 7.62 (s, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.29 (s, 1H), 5.20 (s, 1H), 4.17 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
32	^{1}H NMR (500 MHz, CDCl3) δ 7.36 – 7.26 (m, 1H), 7.25 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.11 (m, 3H), 5.30 (s, 1H), 5.20 (s, 1H), 4.37 (s,2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 2.38 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
33	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 7.09 – 6.91 (m, 3H), 5.24 (s, 1H), 5.17 (s, 1H), 4.31 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 2.28 (d, *J* = 1.0 Hz, 6H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
34	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 7.11 – 7.07 (m, 1H), 7.07 – 7.00 (m, 2H), 5.27 (s, 1H), 5.23 (s, 1H), 4.33 (s,

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	2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 2.37 (s, 3H), 2.34 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
35	^{1}H NMR (500 MHz, CDCl3) δ 7.24 (t, *J* = 57.3 Hz, 1H), 7.12 – 7.00 (m, 3H), 5.21 (s, 1H), 5.19 (s, 1H), 4.29 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 2.27 (s, 6H), 0.74 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
36	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 6.80 (s, 2H), 5.21 (s, 1H), 5.19 (s, 1H), 4.29 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 2.26 (d, *J* = 0.9 Hz, 9H), 0.74 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
37	^{1}H NMR (500 MHz, CDCl3) δ 7.22 (t, *J* = 57.3 Hz, 1H), 7.15 – 7.05 (m, 3H), 5.27 (s, 1H), 5.23 (s, 1H), 4.33 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 3.08 – 2.99 (m, 1H), 2.34 (s, 3H), 1.27 (d, *J* = 6.6 Hz, 6H), 0.75 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
38	^{1}H NMR (500 MHz, CDCl3) δ 7.26 (t, *J* = 57.3 Hz, 1H), 7.20 – 7.10 (m, 2H), 6.97 – 6.93 (m, 1H), 5.26 (s, 1H), 5.19 (s, 1H), 4.35 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 3.32 – 3.22 (m, 1H), 2.37 (s, 3H), 1.26 (d, *J* = 6.8 Hz, 6H), 0.75 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
39	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 7.11 – 6.92 (m, 3H), 5.27 (s, 1H), 5.21 (s, 1H), 4.35 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 2.37 (s, 3H), 1.34 (s, 9H), 0.75 – 0.64 (m, 2H), 0.64 – 0.55 (m, 2H).
40	^{1}H NMR (500 MHz, CDCl3) δ 7.26 (t, *J* = 57.3 Hz, 1H), 7.23 – 7.04 (m, 3H), 5.27 (s, 1H), 5.23 (s, 1H), 4.34 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 2.34 (s, 3H), 1.33 (s, 9H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
41	^{1}H NMR (500 MHz, CDCl3) δ 7.25 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.06 (m, 3H), 5.24 (s, 1H), 5.17 (s, 1H), 4.31 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 2.94 – 2.86 (m, 1H), 2.34 (s, 3H), 1.27 (d, *J* = 6.6 Hz, 6H), 0.78 – 0.65 (m, 2H), 0.65 – 0.54 (m, 2H).
42	^{1}H NMR (500 MHz, CDCl3) δ 7.37 – 7.31 (m, 1H), 7.24 (dd, *J* = 8.0, 1.9 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.11 (m, 1H), 5.23 (s, 1H), 5.19 (s, 1H), 4.38 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
43	^{1}H NMR (500 MHz, CDCl3) δ 7.36 – 7.23 (m, 2H), 7.17 (t, *J* = 57.3 Hz, 1H), 7.01 (ddd, *J* = 9.1, 8.1, 1.8 Hz, 1H), 5.26 (s, 1H), 5.18 (s, 1H), 4.15 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
44	^{1}H NMR (500 MHz, CDCl3) δ 7.39 – 7.32 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.14 – 7.09 (m, 1H), 5.27 (s, 1H), 5.22 (s, 1H), 4.40 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.53 (m, 2H).
45	^{1}H NMR (500 MHz, CDCl3) δ 7.55 – 7.48 (m, 3H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.28 (s, 1H), 5.24 (s, 1H), 4.18 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.75 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
46	^{1}H NMR (500 MHz, CDCl3) δ 7.52 (dd, *J* = 10.6, 1.1 Hz, 1H), 7.36 – 7.33 (m, 1H), 7.24 (t, *J* = 57.3 Hz, 1H), 7.17 – 7.10 (m, 1H), 5.28 (s, 1H), 5.24 (s, 1H), 4.18 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
47	^{1}H NMR (500 MHz, CDCl3) δ 7.70 – 7.42 (m, 3H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.18 (s, 1H), 4.18 (s, 2H), 3.96 (s, 3H), 3.73 – 3.63 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
48	^{1}H NMR (500 MHz, CDCl3) δ 7.81 (d, *J* = 2.0 Hz, 1H), 7.71 (dd, *J* = 7.8, 1.9 Hz, 1H), 7.51 (d, *J* = 7.8 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.18 (s, 1H), 4.18 (s, 2H), 3.96 (s, 3H), 3.73 – 3.63 (m, 1H), 3.21 (s, 3H), 0.75 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
49	^{1}H NMR (500 MHz, CDCl3) δ 7.80 – 7.71 (m, 2H), 7.54 – 7.44 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.30 (s, 1H), 5.20 (s, 1H), 4.37 (s, 2H), 3.96 (s, 3H), 3.71 – 3.63 (m, 1H), 3.18 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
50	^{1}H NMR (500 MHz, CDCl3) δ 7.93 (dd, *J* = 8.2, 1.8 Hz, 1H), 7.60 (dd, *J* = 6.3, 1.8 Hz, 1H), 7.50 – 7.38 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.31 (s, 1H), 5.25 (s, 1H), 4.37 (s, 2H), 3.96 (s, 3H), 3.73 – 3.63 (m, 1H), 3.20 (s, 3H), 0.75 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
51	^{1}H NMR (500 MHz, CDCl3) δ 7.95 – 7.50 (m, 3H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.29 (s, 1H), 5.22 (s, 1H), 4.18 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 3.18 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
52	^{1}H NMR (500 MHz, CDCl3) δ 7.82 – 7.76 (m, 2H), 7.58 – 7.52 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.18 (s, 1H), 4.36 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 3.27 (q, *J* = 9.2 Hz, 2H), 1.27 (t, *J* = 9.2 Hz, 3H), 0.76 – 0.65 (m, 2H), 0.65 – 0.54 (m, 2H).
53	^{1}H NMR (500 MHz, CDCl3) δ 7.97 (t, *J* = 1.4 Hz, 1H), 7.80 – 7.73 (m, 1H), 7.55 – 7.46 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.30 (s, 1H), 5.20 (s, 1H), 4.37 (s, 2H), 3.96 (s, 3H), 3.73 – 3.63 (m, 1H), 3.28 (q, *J* = 9.1 Hz, 2H), 1.26 (t, *J* = 9.1 Hz, 3H), 0.75 – 0.65 (m, 2H), 0.65 – 0.53 (m, 2H).
54	^{1}H NMR (500 MHz, CDCl3) δ 7.53 (d, *J* = 1.9 Hz, 1H), 7.38 – 7.31 (m, 2H), 7.24 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.18 (s, 1H), 4.18 (s, 2H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 2.99 – 2.90 (m, 1H), 1.23 (s, 2H), 1.18 (s, 2H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
55	^{1}H NMR (500 MHz, CDCl3) δ 7.43 (dd, *J* = 7.6, 4.9 Hz, 1H), 7.36 – 7.30 (m, 1H), 7.25 (t, *J* = 57.3 Hz, 1H), 7.23 – 7.09 (m, 1H), 5.23 (s, 1H), 5.19 (s, 1H), 4.38 (s, 2H), 3.96 (s, 3H), 3.72 – 3.63 (m, 1H), 2.99 – 2.90 (m, 1H), 1.31 – 1.21 (m, 2H), 1.21 – 1.12 (m, 2H), 0.78 – 0.65 (m, 2H), 0.65 – 0.51 (m, 2H).
56	^{1}H NMR (500 MHz, CDCl3) δ 7.36 (ddd, *J* = 7.9, 6.5, 4.9 Hz, 1H), 7.20 (t, *J* = 57.3 Hz, 1H), 7.16 – 7.09 (m, 1H), 7.06 – 6.98 (m, 2H), 5.24 (s, 1H), 5.19 (s, 1H), 4.86 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.76 (p, *J* = 5.7 Hz, 1H), 1.24 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
57	^{1}H NMR (500 MHz, CDCl3) δ 7.40 – 7.31 (m, 3H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.17 – 7.09 (m, 1H), 5.23 (s, 1H), 5.19 (s, 1H), 4.86 (q, *J* = 7.5, 1.0 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.73 (m, 1H), 1.24 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.65 (m, 2H).
58	^{1}H NMR (500 MHz, CDCl3) δ 7.41 (ddd, *J* = 8.7, 7.4, 5.0 Hz, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.08 (m, 2H), 5.23 (s, 1H), 5.15 (s, 1H), 4.82 (q, *J* = 7.5, 1.1 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
59	^{1}H NMR (500 MHz, CDCl3) δ 7.33 – 7.28 (m, 2H), 7.19 (t, *J* = 57.3 Hz, 1H), 6.90 (d, *J* = 1.3 Hz, 1H), 6.89 (d, *J* = 1.3 Hz, 1H), 5.26 (s, 1H), 5.17 (s, 1H), 4.81 (q, *J* = 7.7, 1.1 Hz, 1H), 3.96 (s, 3H), 3.81 – 3.72 (m, 1H), 1.23 (d, *J* = 7.5 Hz, 3H), 0.80 – 0.72 (m, 2H), 0.72 – 0.64 (m, 2H).
60	^{1}H NMR (500 MHz, CDCl3) δ 7.22 (t, *J* = 57.3 Hz, 1H), 7.11 – 7.02 (m, 4H), 5.26 (s, 1H), 5.17 (s, 1H), 4.81 (q, *J* = 7.7, 1.1 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.72 (m, 1H), 2.38 (s, 3H), 1.23 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
61	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.29 (m, 2H), 7.20 (t, *J* = 59.5 Hz, 1H), 6.87 (d, *J* = 1.4 Hz, 1H), 6.85 (d, *J* = 1.3 Hz, 1H), 5.26 (s, 1H), 5.17 (s, 1H), 4.81 (q, *J* = 7.7, 1.1 Hz, 1H), 3.96 (s, 3H), 3.82 (s, 3H), 3.80 – 3.71 (m, 1H), 1.23 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
62	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.08 (m, 2H), 7.01 (ddd, *J* = 9.8, 5.0, 2.2 Hz, 1H), 5.24 (s, 1H), 5.19

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	(s, 1H), 4.86 (q, *J* = 7.6, 0.9 Hz, 1H), 3.96 (s, 3H), 3.81 – 3.72 (m, 1H), 1.24 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
63	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 6.94 – 6.86 (m, 3H), 5.29 (s, 1H), 5.22 (s, 1H), 4.23 (q, *J* = 7.7, 1.1 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.73 (m, 1H), 1.24 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
64	^{1}H NMR (500 MHz, CDCl3) δ 7.19 (t, *J* = 57.3 Hz, 1H), 7.10 – 7.07 (m, 1H), 6.91 (td, *J* = 8.3, 2.7 Hz, 1H), 6.83 (td, *J* = 8.0, 2.7 Hz, 1H), 5.23 (s, 1H), 5.16 (s, 1H), 4.82 (q, *J* = 7.5, 1.1 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.70 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
65	^{1}H NMR (500 MHz, CDCl3) δ 7.47 – 7.41 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 7.07 (dd, *J* = 8.9, 2.3 Hz, 1H), 5.24 (s, 1H), 5.19 (s, 1H), 4.86 (q, *J* = 7.5, 1.0 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.73 (m, 1H), 1.24 (d, *J* = 7.7 Hz, 3H), 0.79 – 0.72 (m, 2H), 0.72 – 0.65 (m, 2H).
66	^{1}H NMR (500 MHz, CDCl3) δ 7.52 – 7.46 (m, 2H), 7.36 – 7.33 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.17 (s, 1H), 4.81 (q, *J* = 7.7, 1.1 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.23 (d, *J* = 7.5 Hz, 3H), 0.79 – 0.72 (m, 2H), 0.72 – 0.65 (m, 2H).
67	^{1}H NMR (500 MHz, CDCl3) δ 7.41 (d, *J* = 2.1 Hz, 1H), 7.34 – 7.24 (m, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 7.14 (d, *J* = 47.5 Hz, 1H), 5.21 (s, 1H), 5.15 (s, 1H), 4.87 (q, *J* = 7.7, 1.0 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.72 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
68	^{1}H NMR (500 MHz, CDCl3) δ 7.36 – 7.28 (m, 2H), 7.20 (t, *J* = 57.3 Hz, 1H), 7.06 – 7.00 (m, 2H), 5.26 (s, 1H), 5.18 (s, 1H), 4.81 (q, *J* = 7.7, 1.1 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.72 (m, 1H), 1.23 (d, *J* = 7.5 Hz, 3H), 0.79 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
69	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.22 (m, 1H), 7.17 (t, *J* = 57.3 Hz, 1H), 6.98 – 6.91 (m, 2H), 6.79 (dd, *J* = 2.6, 1.9 Hz, 1H), 5.24 (s, 1H), 5.19 (s, 1H), 4.86 (q, *J* = 7.5, 1.0 Hz, 1H), 3.96 (s, 3H), 3.82 (s, 3H), 3.80 – 3.73 (m, 1H), 1.24 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
70	^{1}H NMR (500 MHz, CDCl3) δ 7.27 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.00 (m, 4H), 5.23 (s, 1H), 5.19 (s, 1H), 4.86 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.73 (m, 1H), 2.38 (s, 3H), 1.23 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
71	^{1}H NMR (500 MHz, CDCl3) δ 7.69 – 7.58 (m, 2H), 7.36 – 7.32 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.17 (s, 1H), 4.79 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.73 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.65 (m, 2H).
72	^{1}H NMR (500 MHz, CDCl3) δ 7.44 – 7.27 (m, 4H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.21 (s, 1H), 5.15 (s, 1H), 4.87 (q, *J* = 7.7, 1.0 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.72 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
73	^{1}H NMR (500 MHz, CDCl3) δ 7.41 – 7.33 (m, 3H), 7.15 (t, *J* = 57.3 Hz, 1H), 5.23 (s, 1H), 5.20 (s, 1H), 4.28 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
74	^{1}H NMR (500 MHz, CDCl3) δ 7.29 (s, 2H), 7.15 (t, *J* = 57.3 Hz, 1H), 5.22 (s, 1H), 5.19 (s, 1H), 4.28 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 0.79 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
75	^{1}H NMR (500 MHz, CDCl3) δ 7.42 – 7.32 (m, 2H), 7.24 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.08 (m, 1H), 5.30 (s, 1H), 5.23 (s, 1H), 4.34 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
76	^{1}H NMR (500 MHz, CDCl3) δ 7.50 (d, *J* = 2.3 Hz, 1H), 7.41 – 7.34 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.31 (s, 1H), 5.24 (s, 1H), 4.34 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.71 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
77	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.29 (m, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.19 – 7.09 (m, 2H), 5.23 (s, 1H), 5.19 (s, 1H), 4.88 (q, *J* = 7.7, 1.0 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
78	^{1}H NMR (500 MHz, CDCl3) δ 7.42 (tt, *J* = 7.9, 5.1 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 7.04 – 6.98 (m, 2H), 5.28 (s, 1H), 5.23 (s, 1H), 4.83 (q, *J* = 7.5, 1.1 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
79	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 6.67 (ddd, *J* = 8.3, 7.4, 1.0 Hz, 2H), 5.28 (s, 1H), 5.23 (s, 1H), 4.83 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.72 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
80	^{1}H NMR (500 MHz, CDCl3) δ 7.67 – 7.61 (m, 1H), 7.44 – 7.30 (m, 3H), 7.15 (t, *J* = 57.3 Hz, 1H), 5.19 (s, 1H), 5.11 (s, 1H), 4.83 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.65 (m, 2H).
81	^{1}H NMR (500 MHz, CDCl3) δ 7.54 (dt, *J* = 7.9, 1.6 Hz, 1H), 7.42 (t, *J* = 1.9 Hz, 1H), 7.29 (dd, *J* = 8.0, 6.8 Hz, 1H), 7.27 – 7.21 (m, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.23 (s, 1H), 5.19 (s, 1H), 4.90 – 4.82 (m, 1H), 3.96 (s, 2H), 3.80 – 3.72 (m, 1H), 1.24 (d, *J* = 7.7 Hz, 3H), 0.79 – 0.66 (m, 4H).
82	^{1}H NMR (500 MHz, CDCl3) δ 7.71 (d, *J* = 1.9 Hz, 1H), 7.47 (dd, *J* = 9.0, 2.0 Hz, 1H), 7.34 – 7.23 (m, 1H), 7.15 (t, *J* = 57.3 Hz, 1H), 5.18 (s, 1H), 5.09 (s, 1H), 4.83 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.71 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
83	^{1}H NMR (500 MHz, CDCl3) δ 7.65 – 7.58 (m, 2H), 7.51 (dd, *J* = 7.9, 2.6 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.24 (s, 1H), 5.18 (s, 1H), 4.88 (d, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
84	^{1}H NMR (500 MHz, CDCl3) δ 7.52 (d, *J* = 8.3 Hz, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 7.07 (d, *J* = 8.1 Hz, 1H), 5.23 (s, 1H), 5.22 (s, 1H), 4.82 (q, *J* = 7.6, 1.1 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.72 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
85	^{1}H NMR (500 MHz, CDCl3) δ 7.68 (s, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.23 (s, 1H), 5.22 (s, 1H), 4.82 (d, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.72 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
86	^{1}H NMR (500 MHz, CDCl3) δ 7.60 (dd, *J* = 7.9, 1.5 Hz, 1H), 7.36 – 7.30 (m, 1H), 7.24 (t, *J* = 57.3 Hz, 1H), 7.19 – 7.10 (m, 1H), 5.25 (s, 1H), 5.20 (s, 1H), 4.39 (s, 1H), 4.14 (s, 1H), 3.96 (s, 3H), 3.71 – 3.64 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
87	^{1}H NMR (500 MHz, CDCl3) δ 7.33 – 7.26 (m, 1H), 7.26 – 7.21 (m, 1H), 7.19 (t, *J* = 57.3 Hz, 1H), 7.17 – 7.09 (m, 2H), 5.22 (s, 1H), 5.14 (s, 1H), 4.74 (d, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.73 (m, 1H), 2.35 (s, 3H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
88	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 7.00 – 6.89 (m, 3H), 5.22 (s, 1H), 5.14 (s, 1H), 4.74 (d, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.73 (m, 1H), 2.29 (s, 3H), 2.28 (s, 3H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
89	^{1}H NMR (500 MHz, CDCl3) δ 7.27 (t, *J* = 57.3 Hz, 1H), 7.10 – 7.01 (m, 3H), 5.26 (s, 1H), 5.18 (s, 1H), 4.79 (d, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.73 (m, 1H), 2.37 (d, *J* = 0.9 Hz, 6H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
90	^{1}H NMR (500 MHz, CDCl3) δ 7.22 (t, *J* = 57.3 Hz, 1H), 7.12 – 6.98 (m, 3H), 5.03 (s, 1H), 5.03 (s, 1H), 4.64 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.73 (m, 1H), 2.29 (s, 6H), 1.25 (d, *J* = 7.6 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).

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91	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 6.78 (s, 2H), 5.03 (s, 1H), 5.03 (s, 1H), 4.64 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.73 (m, 1H), 2.26 (s, 3H), 2.25 (s, 6H), 1.25 (d, *J* = 7.6 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
92	^{1}H NMR (500 MHz, CDCl3) δ 7.20 (t, *J* = 57.3 Hz, 1H), 7.16 – 7.08 (m, 3H), 5.26 (s, 1H), 5.18 (s, 1H), 4.79 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.73 (m, 1H), 3.08 – 2.99 (m, 1H), 2.37 (s, 3H), 1.30 (d, *J* = 6.6 Hz, 3H), 1.25 (d, *J* = 1.1 Hz, 3H), 1.24 (d, *J* = 2.0 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.64 (m, 2H).
93	(500 MHz, CDCl3) δ 7.25 (t, *J* = 57.3 Hz, 1H), 7.21 – 6.93 (m, 3H), 5.26 (s, 1H), 5.17 (s, 1H), 4.78 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.73 (m, 1H), 3.26 – 3.16 (m, 1H), 2.37 (s, 3H), 1.28 (d, *J* = 6.9 Hz, 3H), 1.25 (d, *J* = 5.9 Hz, 3H), 1.23 (d, *J* = 5.2 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
94	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 7.08 (d, *J* = 7.5 Hz, 1H), 6.97 – 6.86 (m, 2H), 5.26 (s, 1H), 5.20 (s, 1H), 4.83 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.73 (m, 1H), 2.37 (s, 3H), 1.34 (s, 9H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
95	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.22 (m, 1H), 7.18 (t, *J* = 57.3 Hz, 1H), 7.07 – 7.00 (m, 2H), 5.26 (s, 1H), 5.18 (s, 1H), 4.79 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.73 (m, 1H), 2.37 (s, 3H), 1.33 (s, 9H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.64 (m, 2H).
96	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 7.08 (dt, *J* = 2.7, 1.2 Hz, 3H), 5.22 (s, 1H), 5.14 (s, 1H), 4.74 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.71 (m, 1H), 2.95 – 2.86 (m, 1H), 2.35 (s, 3H), 1.30 (d, *J* = 6.6 Hz, 3H), 1.25 (s, 3H), 1.24 (d, *J* = 0.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
97	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.20 (m, 3H), 7.18 (t, *J* = 57.3 Hz, 1H), 5.23 (s, 1H), 5.15 (s, 1H), 4.82 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.81 – 3.69 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
98	^{1}H NMR (500 MHz, CDCl3) δ 7.27 (t, *J* = 57.3 Hz, 1H), 7.24 – 7.09 (m, 2H), 7.05 (ddd, *J* = 9.0, 8.1, 1.8 Hz, 1H), 5.23 (s, 1H), 5.15 (s, 1H), 4.87 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.72 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
99	^{1}H NMR (500 MHz, CDCl3) δ 7.49 (dd, *J* = 5.1, 2.5 Hz, 1H), 7.35 (ddd, *J* = 7.3, 4.9, 2.4 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.15 – 7.07 (m, 1H), 5.23 (s, 1H), 5.19 (s, 1H), 4.87 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 0.79 – 0.72 (m, 2H), 0.72 – 0.65 (m, 2H).
100	^{1}H NMR (500 MHz, CDCl3) δ 7.65 – 7.43 (m, 3H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.31 (s, 1H), 5.23 (s, 1H), 4.34 (q, *J* = 7.5 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.71 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
101	^{1}H NMR (500 MHz, CDCl3) δ 7.52 (dd, *J* = 10.6, 1.3 Hz, 1H), 7.36 – 7.28 (m, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 7.20 – 7.07 (m, 1H), 5.32 (s, 1H), 5.24 (s, 1H), 4.34 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
102	^{1}H NMR (500 MHz, CDCl3) δ 7.71 – 7.55 (m, 2H), 7.36 (d, *J* = 11.6 Hz, 1H), 7.21 (q, *J* = 57.3 Hz, 1H), 5.21 (s, 1H), 5.15 (s, 1H), 4.87 (q, *J* = 7.7, 1.0 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
103	^{1}H NMR (500 MHz, CDCl3) δ 7.75 (d, *J* = 1.9 Hz, 1H), 7.70 (dd, *J* = 8.1, 2.0 Hz, 1H), 7.57 (d, *J* = 8.1 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.21 (s, 1H), 5.15 (s, 1H), 4.87 (q, *J* = 7.7, 1.0 Hz, 1H), 3.96 (s, 3H), 3.75 (p, *J* = 5.8 Hz, 1H), 3.21 (s, 3H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
104	^{1}H NMR (500 MHz, CDCl3) δ 7.75 (ddd, *J* = 8.6, 2.0, 1.2 Hz, 1H), 7.51 (t, *J* = 2.0 Hz, 1H), 7.48 (dd, *J* = 8.5, 6.7 Hz, 1H), 7.35 – 7.07 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.24 (s, 1H), 5.19 (s, 1H), 4.86 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.72 (m, 1H), 3.18 (s, 3H), 1.24 (d, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
105	^{1}H NMR (500 MHz, CDCl3) δ 7.92 (dd, *J* = 8.2, 1.9 Hz, 1H), 7.63 (dd, *J* = 6.5, 1.8 Hz, 1H), 7.49 – 7.40 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.20 (s, 1H), 4.89 (q, *J* = 7.5, 1.0 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.71 (m, 1H), 3.20 (s, 3H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
106	^{1}H NMR (500 MHz, CDCl3) δ 7.70 – 7.60 (m, 2H), 7.56 (d, *J* = 9.3 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.31 (s, 1H), 5.24 (s, 1H), 4.34 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.72 (m, 1H), 3.18 (s, 3H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
107	^{1}H NMR (500 MHz, CDCl3) δ 7.84 – 7.74 (m, 2H), 7.51 – 7.43 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.26 (s, 1H), 5.17 (s, 1H), 4.81 (q, *J* = 7.7, 1.1 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.73 (m, 1H), 3.27 (q, *J* = 9.2, 1.4 Hz, 2H), 1.27 (t, *J* = 9.2 Hz, 3H), 1.23 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
108	^{1}H NMR (500 MHz, CDCl3) δ 7.77 (ddd, *J* = 8.4, 1.8, 1.1 Hz, 1H), 7.66 – 7.46 (m, 2H), 7.35 – 7.31 (m, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.24 (s, 1H), 5.19 (s, 1H), 4.86 (q, *J* = 7.5, 0.9 Hz, 1H), 3.96 (s, 3H), 3.80 – 3.72 (m, 1H), 3.28 (q, *J* = 9.2, 2.6 Hz, 2H), 1.26 (t, *J* = 9.2 Hz, 3H), 1.24 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
109	^{1}H NMR (500 MHz, CDCl3) δ 7.51 (d, *J* = 1.5 Hz, 1H), 7.36 – 7.32 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 5.21 (s, 1H), 5.15 (s, 1H), 4.87 (q, *J* = 7.7, 1.0 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.71 (m, 1H), 2.98 – 2.90 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 1.24 – 1.20 (m, 2H), 1.20 – 1.13 (m, 2H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
110	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.21 (m, 3H), 7.18 (t, *J* = 57.3 Hz, 1H), 5.23 (s, 1H), 5.16 (s, 1H), 4.82 (q, *J* = 7.5, 1.1 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.72 (m, 1H), 2.99 – 2.91 (m, 1H), 1.25 (d, *J* = 7.5 Hz, 3H), 1.24 – 1.20 (m, 2H), 1.20 – 1.13 (m, 2H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
111	^{1}H NMR (500 MHz, CDCl3) δ 7.49 – 7.45 (m, 2H), 7.42 – 7.37 (m, 1H), 7.35 – 7.30 (m, 2H), 7.25 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
112	^{1}H NMR (500 MHz, CDCl3) δ 7.57 – 7.52 (m, 2H), 7.36 – 7.28 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 0.75 – 0.65 (m, 2H), 0.65 – 0.53 (m, 2H).
113	^{1}H NMR (500 MHz, CDCl3) δ 7.59 – 7.51 (m, 2H), 7.38 – 7.28 (m, 2H), 7.20 (t, *J* = 57.3 Hz, 1H), 4.69 (s, 2H), 4.02 (s, 3H), 3.64 – 3.58 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
114	^{1}H NMR (500 MHz, CDCl3) δ 7.90 (s, 1H), 7.58 – 7.51 (m, 2H), 7.38 – 7.28 (m, 2H), 7.22 (t, *J* = 57.3 Hz, 1H), 4.61 (s, 2H), 3.90 (s, 3H), 3.65 – 3.58 (m, 1H), 0.75 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
115	^{1}H NMR (500 MHz, CDCl3) δ 7.54 (ddd, *J* = 8.8, 4.9, 1.5 Hz, 1H), 7.45 – 7.38 (m, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.17 – 7.09 (m, 2H), 4.63 (s, 2H), 3.96 (s, 3H), 3.62 – 3.54 (m, 1H), 0.76 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).

[0121]

116	^{1}H NMR (500 MHz, CDCl3) δ 7.49 (dd, *J* = 7.9, 1.6 Hz, 1H), 7.42 – 7.35 (m, 2H), 7.35 – 7.25 (m, 1H), 7.21 (q, *J* = 57.3 Hz, 1H), 4.62 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.54 (m, 2H).
117	^{1}H NMR (500 MHz, CDCl3) δ 7.45 (t, *J* = 1.9 Hz, 1H), 7.42 – 7.34 (m, 3H), 7.22 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
118	^{1}H NMR (500 MHz, CDCl3) δ 7.43 – 7.38 (m, 2H), 7.27 (t, *J* = 57.3 Hz, 1H), 7.23 – 7.09 (m, 1H), 4.62 (s, 2H), 3.96 (s, 3H), 3.63 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
119	^{1}H NMR (500 MHz, CDCl3) δ 7.45 – 7.35 (m, 3H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
120	^{1}H NMR (500 MHz, CDCl3) δ 7.42 – 7.32 (m, 3H), 7.22 (t, *J* = 57.3 Hz, 1H), 4.65 (s, 2H), 3.96 (s, 3H), 3.62 – 3.54 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
121	^{1}H NMR (500 MHz, CDCl3) δ 7.52 – 7.41 (m, 3H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
122	^{1}H NMR (500 MHz, CDCl3) δ 7.43 – 7.31 (m, 3H), 7.17 (t, *J* = 57.3 Hz, 1H), 4.76 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 0.75 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
123	^{1}H NMR (500 MHz, CDCl3) δ 7.29 (t, *J* = 7.4 Hz, 2H), 7.17 (d, *J* = 57.3 Hz, 1H), 4.65 (s, 2H), 3.96 (s, 3H), 3.62 – 3.54 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
124	^{1}H NMR (500 MHz, CDCl3) δ 7.36 – 7.31 (m, 2H), 7.31 – 7.24 (m, 1H), 7.19 (q, *J* = 7.4 Hz, 1H), 7.16 – 7.10 (m, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
125	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.30 (m, 2H), 7.25 (ddd, *J* = 8.1, 2.5, 1.3 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.13 (m, 1H), 4.68 (s, 2H), 3.64 – 3.58 (m, 1H), 0.73 – 0.65 (m, 2H), 0.64 – 0.57 (m, 2H).
126	^{1}H NMR (500 MHz, CDCl3) δ 7.36 – 7.28 (m, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 6.88 – 6.78 (m, 2H), 4.65 (s, 2H), 3.96 (s, 3H), 3.61 – 3.54 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
127	^{1}H NMR (500 MHz, CDCl3) δ 7.36 – 7.24 (m, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.20 – 7.11 (m, 2H), 4.69 (s, 2H), 3.96 (s, 3H), 3.62 – 3.54 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
128	^{1}H NMR (500 MHz, CDCl3) δ 7.43 (tt, *J* = 7.8, 4.9 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 6.98 (td, *J* = 7.5, 0.9 Hz, 2H), 4.66 (s, 2H), 3.96 (s, 3H), 3.62 – 3.54 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
129	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 6.73 (tt, *J* = 8.2, 0.9 Hz, 2H), 4.67 (s, 2H), 3.96 (s, 3H), 3.62 – 3.54 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
130	^{1}H NMR (500 MHz, CDCl3) δ 7.35 – 7.30 (m, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.19 – 7.09 (m, 2H), 4.68 (s, 2H), 3.96 (s, 3H), 3.63 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
131	^{1}H NMR (500 MHz, CDCl3) δ 7.46 (s, 4H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
132	^{1}H NMR (500 MHz, CDCl3) δ 7.64 – 7.56 (m, 1H), 7.56 – 7.50 (m, 1H), 7.36 – 7.30 (m, 2H), 7.22 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.54 (m, 2H).
133	^{1}H NMR (500 MHz, CDCl3) δ 7.57 – 7.51 (m, 2H), 7.46 (ddd, *J* = 8.1, 2.0, 1.3 Hz, 1H), 7.36 – 7.28 (m, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
134	^{1}H NMR (500 MHz, CDCl3) δ 7.69 (d, *J* = 1.9 Hz, 1H), 7.45 – 7.35 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.54 (m, 2H).
135	^{1}H NMR (500 MHz, CDCl3) δ 7.60 (d, *J* = 7.7 Hz, 1H), 7.55 – 7.48 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.68 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
136	^{1}H NMR (500 MHz, CDCl3) δ 7.49 (d, *J* = 8.1 Hz, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.08 (t, *J* = 8.1 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.63 – 3.55 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
137	^{1}H NMR (500 MHz, CDCl3) δ 7.62 (s, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.63 – 3.55 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
138	^{1}H NMR (500 MHz, CDCl3) δ 7.60 – 7.53 (m, 2H), 7.37 (dd, *J* = 8.8, 1.8 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.63 – 3.56 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
139	^{1}H NMR (500 MHz, CDCl3) δ 7.39 (dt, *J* = 7.0, 2.0 Hz, 1H), 7.25 (s, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.20 – 7.13 (m, 2H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 2.38 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
140	^{1}H NMR (500 MHz, CDCl3) δ 7.29 (t, *J* = 57.3 Hz, 1H), 7.14 – 7.10 (m, 1H), 6.98 – 6.89 (m, 2H), 4.60 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 2.28 (s, 3H), 2.27 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
141	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 7.11 – 7.03 (m, 3H), 4.64 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 2.37 (s, 3H), 2.35 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
142	^{1}H NMR (500 MHz, CDCl3) δ 7.24 (t, *J* = 57.3 Hz, 1H), 7.13 – 7.10 (m, 1H), 7.03 – 6.99 (m, 2H), 4.58 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 2.26 (s, 6H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
143	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 6.82 (s, 2H), 4.58 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 2.27 (s, 3H), 2.26 (s, 6H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
144	^{1}H NMR (500 MHz, CDCl3) δ 7.22 (t, *J* = 57.3 Hz, 1H), 7.16 – 7.09 (m, 3H), 4.64 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 3.08 – 2.99 (m, 1H), 2.35 (s, 3H), 1.27 (d, *J* = 6.6 Hz, 6H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
145	^{1}H NMR (500 MHz, CDCl3) δ 7.27 (t, *J* = 57.3 Hz, 1H), 7.22 – 7.10 (m, 2H), 7.00 – 6.95 (m, 1H), 4.65 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 3.34 – 3.23 (m, 1H), 2.37 (s, 3H), 1.26 (d, *J* = 6.8 Hz, 6H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
146	^{1}H NMR (500 MHz, CDCl3) δ 7.24 (t, *J* = 57.3 Hz, 1H), 7.12 (d, *J* = 1.9 Hz, 1H), 7.01 – 6.94 (m, 2H), 4.65 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 2.37 (s, 3H), 1.34 (s, 9H), 0.72 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
147	^{1}H NMR (500 MHz, CDCl3) δ 7.28 (t, *J* = 57.3 Hz, 1H), 7.25 – 7.11 (m, 2H), 7.06 (dq, *J* = 7.3, 1.0 Hz, 1H), 4.64 (s, 2H), 3.96 (s, 3H), 3.63 – 3.57 (m, 1H), 2.35 (s, 3H), 1.33 (s, 9H), 0.73 – 0.65 (m, 2H), 0.65 – 0.57 (m, 2H).
148	^{1}H NMR (500 MHz, CDCl3) δ 7.27 (t, *J* = 57.3 Hz, 1H), 7.16 (d, *J* = 44.5 Hz, 1H), 7.12 – 7.05 (m, 2H), 4.60 (s, 2H), 3.96 (s, 3H), 3.63 – 3.57 (m, 1H), 2.95 – 2.85 (m, 1H), 2.37 (s, 3H), 1.27 (d, *J* = 6.6 Hz, 6H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).

[0122]

149	^{1}H NMR (500 MHz, CDCl3) δ 7.36 – 7.31 (m, 1H), 7.27 (td, *J* = 7.6, 1.9 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.22 – 7.01 (m, 2H), 4.60 (s, 2H), 3.96 (s, 3H), 3.63 – 3.57 (m, 1H), 2.36 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
150	^{1}H NMR (500 MHz, CDCl3) δ 7.28 (t, *J* = 57.3 Hz, 2H), 7.25 – 7.10 (m, 1H), 7.04 – 6.99 (m, 2H), 4.66 (s, 2H), 3.96 (s, 3H), 3.63 – 3.57 (m, 1H), 2.38 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
151	^{1}H NMR (500 MHz, CDCl3) δ 7.20 (t, *J* = 57.3 Hz, 1H), 7.12 – 7.04 (m, 3H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 2.32 (s, 3H), 2.30 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
152	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 7.11 – 6.95 (m, 3H), 4.75 (s, 2H), 3.96 (s, 3H), 3.63 – 3.57 (m, 1H), 2.28 (s, 6H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
153	^{1}H NMR (500 MHz, CDCl3) δ 7.38 (dd, *J* = 8.7, 4.9 Hz, 1H), 7.35 – 7.25 (m, 1H), 7.22 (t, *J* = 57.3 Hz, 1H), 7.17 – 7.10 (m, 1H), 4.65 (s, 2H), 3.96 (s, 3H), 3.62 – 3.55 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
154	^{1}H NMR (500 MHz, CDCl3) δ 7.36 (t, *J* = 57.3 Hz, 1H), 7.34 – 7.11 (m, 2H), 7.02 (ddd, *J* = 8.8, 8.0, 1.9 Hz, 1H), 4.61 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
155	^{1}H NMR (500 MHz, CDCl3) δ 7.42 (dd, *J* = 5.0, 2.5 Hz, 1H), 7.38 – 7.35 (m, 1H), 7.24 (t, *J* = 57.3 Hz, 1H), 7.15 – 7.09 (m, 1H), 4.69 (s, 2H), 3.96 (s, 3H), 3.62 – 3.55 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
156	^{1}H NMR (500 MHz, CDCl3) δ 7.62 (d, *J* = 2.0 Hz, 1H), 7.54 – 7.47 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
157	^{1}H NMR (500 MHz, CDCl3) δ 7.53 (dd, *J* = 10.6, 1.1 Hz, 1H), 7.37 (dd, *J* = 7.6, 1.2 Hz, 1H), 7.25 (t, *J* = 57.3 Hz, 1H), 7.15 – 7.10 (m, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
158	^{1}H NMR (500 MHz, CDCl3) δ 7.72 (d, *J* = 2.0 Hz, 1H), 7.62 – 7.50 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.62 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
159	^{1}H NMR (500 MHz, CDCl3) δ 7.77 (d, *J* = 1.9 Hz, 1H), 7.70 (dd, *J* = 9.3, 1.9 Hz, 1H), 7.56 (d, *J* = 9.2 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.61 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 3.21 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
160	^{1}H NMR (500 MHz, CDCl3) δ 8.04 (t, *J* = 1.9 Hz, 1H), 7.76 (ddd, *J* = 8.4, 1.8, 1.1 Hz, 1H), 7.63 (ddd, *J* = 7.9, 1.9, 1.2 Hz, 1H), 7.47 (dd, *J* = 8.5, 7.9 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 3.18 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
161	^{1}H NMR (500 MHz, CDCl3) δ 7.89 (dd, *J* = 8.4, 1.6 Hz, 1H), 7.68 (dd, *J* = 8.0, 1.7 Hz, 1H), 7.50 – 7.38 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.53 (s, 2H), 3.96 (s, 3H), 3.63 – 3.55 (m, 1H), 3.20 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
162	^{1}H NMR (500 MHz, CDCl3) δ 8.08 (d, *J* = 2.2 Hz, 1H), 7.66 (dd, *J* = 9.3, 2.2 Hz, 1H), 7.58 (d, *J* = 9.4 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.57 (m, 1H), 3.18 (s, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
163	^{1}H NMR (500 MHz, CDCl3) δ 7.82 – 7.70 (m, 4H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.66 – 3.56 (m, 1H), 3.27 (q, *J* = 9.2 Hz, 2H), 1.27 (t, *J* = 9.2 Hz, 3H), 0.75 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
164	^{1}H NMR (500 MHz, CDCl3) δ 8.13 (t, *J* = 1.9 Hz, 1H), 7.78 (ddd, *J* = 8.6, 2.0, 1.3 Hz, 1H), 7.63 (ddd, *J* = 7.9, 1.9, 1.2 Hz, 1H), 7.50 (dd, *J* = 8.5, 7.9 Hz, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 3.28 (q, *J* = 9.1 Hz, 2H), 1.26 (t, *J* = 9.1 Hz, 3H), 0.74 – 0.65 (m, 2H), 0.65 – 0.56 (m, 2H).
165	^{1}H NMR (500 MHz, CDCl3) δ 7.54 (d, *J* = 1.9 Hz, 1H), 7.47 (d, *J* = 8.0 Hz, 1H), 7.36 – 7.28 (m, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.62 (s, 2H), 3.96 (s, 3H), 3.64 – 3.56 (m, 1H), 2.99 – 2.90 (m, 1H), 1.29 – 1.20 (m, 2H), 1.20 – 1.13 (m, 2H), 0.75 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
166	^{1}H NMR (500 MHz, CDCl3) δ 7.50 (dd, *J* = 9.0, 5.0 Hz, 1H), 7.36 – 7.24 (m, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.22 – 7.10 (m, 1H), 4.66 (s, 2H), 3.96 (s, 3H), 3.58 (s, 1H), 3.01 – 2.90 (m, 1H), 1.29 – 1.20 (m, 2H), 1.20 – 1.13 (m, 2H), 0.74 – 0.65 (m, 2H), 0.65 – 0.55 (m, 2H).
167	^{1}H NMR (500 MHz, CDCl3) δ 7.94 (s, 1H), 7.39 – 7.30 (m, 2H), 7.26 (t, *J* = 57.3 Hz, 1H), 7.24 – 7.11 (m, 2H), 4.28 (q, *J* = 7.7 Hz, 1H), 3.90 (s, 3H), 3.73 – 3.65 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
168	^{1}H NMR (500 MHz, CDCl3) δ 7.44 (dd, *J* = 8.1, 1.8 Hz, 1H), 7.40 (dd, *J* = 8.0, 1.6 Hz, 1H), 7.37 (td, *J* = 7.7, 1.7 Hz, 1H), 7.33 – 7.26 (m, 1H), 7.20 (t, *J* = 57.3 Hz, 1H), 4.34 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
169	^{1}H NMR (500 MHz, CDCl3) δ 7.42 (t, *J* = 1.9 Hz, 1H), 7.38 (dt, *J* = 8.1, 1.6 Hz, 1H), 7.35 (t, *J* = 8.0 Hz, 1H), 7.24 (t, *J* = 57.3 Hz, 1H), 7.21 – 7.08 (m, 1H), 4.32 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
170	^{1}H NMR (500 MHz, CDCl3) δ 7.43 (d, *J* = 2.1 Hz, 1H), 7.34 – 7.26 (m, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.13 (d, *J* = 35.8 Hz, 1H), 4.34 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.69 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
171	^{1}H NMR (500 MHz, CDCl3) δ 7.45 – 7.39 (m, 2H), 7.36 (dd, *J* = 7.3, 2.4 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.35 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.69 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
172	^{1}H NMR (500 MHz, CDCl3) δ 7.39 (dd, *J* = 9.3, 6.8 Hz, 1H), 7.36 – 7.32 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.39 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.36 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
173	^{1}H NMR (500 MHz, CDCl3) δ 7.49 – 7.44 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.15 – 7.06 (m, 1H), 4.32 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
174	^{1}H NMR (500 MHz, CDCl3) δ 7.35 – 7.30 (m, 3H), 7.20 (t, *J* = 57.3 Hz, 1H), 4.33 (q, *J* = 7.8 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
175	^{1}H NMR (500 MHz, CDCl3) δ 7.31 (d, *J* = 16.1 Hz, 2H), 7.15 (t, *J* = 57.3 Hz, 1H), 4.39 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.36 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
176	^{1}H NMR (500 MHz, CDCl3) δ 7.41 (dddd, *J* = 8.8, 7.9, 5.0, 1.6 Hz, 1H), 7.39 – 7.34 (m, 1H), 7.22 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.09 (m, 2H), 4.35 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.35 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
177	^{1}H NMR (500 MHz, CDCl3) δ 7.36 – 7.32 (m, 1H), 7.24 (t, *J* = 57.3 Hz, 1H), 7.21 – 7.08 (m, 3H), 4.31 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
178	^{1}H NMR (500 MHz, CDCl3) δ 7.35 – 7.30 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.07 – 7.00 (m, 2H), 4.32 (q, *J* = 7.7 Hz, 1H), 3.96 (s,

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	3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
179	^{1}H NMR (500 MHz, CDCl3) δ 7.24 (t, *J* = 57.3 Hz, 1H), 7.21 – 7.09 (m, 1H), 6.91 (td, *J* = 8.2, 2.0 Hz, 1H), 6.84 (td, *J* = 7.9, 1.9 Hz, 1H), 4.35 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.35 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
180	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.29 (m, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 7.19 – 7.08 (m, 2H), 4.35 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.35 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
181	^{1}H NMR (500 MHz, CDCl3) δ 7.43 (tt, *J* = 7.8, 4.9 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 7.00 (td, *J* = 7.5, 0.9 Hz, 2H), 4.40 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.69 (m, 1H), 1.37 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
182	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 6.72 (tt, *J* = 8.1, 0.8 Hz, 2H), 4.40 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.37 (d, *J* = 7.5 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
183	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.28 (m, 1H), 7.20 (t, *J* = 57.3 Hz, 1H), 7.14 – 7.02 (m, 2H), 4.32 (q, *J* = 7.8 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.68 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.79 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
184	^{1}H NMR (500 MHz, CDCl3) δ 7.49 – 7.43 (m, 2H), 7.39 – 7.34 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.32 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
185	^{1}H NMR (500 MHz, CDCl3) δ 7.64 – 7.57 (m, 1H), 7.48 – 7.43 (m, 1H), 7.34 – 7.29 (m, 2H), 7.23 (t, *J* = 57.3 Hz, 1H), 4.33 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
186	^{1}H NMR (500 MHz, CDCl3) δ 7.58 – 7.55 (m, 1H), 7.55 – 7.51 (m, 1H), 7.34 – 7.28 (m, 2H), 7.24 (t, *J* = 57.3 Hz, 1H), 4.32 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
187	^{1}H NMR (500 MHz, CDCl3) δ 7.72 (d, *J* = 1.9 Hz, 1H), 7.47 (dd, *J* = 8.7, 1.9 Hz, 1H), 7.34 – 7.25 (m, 1H), 7.15 (t, *J* = 57.3 Hz, 1H), 4.33 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
188	^{1}H NMR (500 MHz, CDCl3) δ 7.64 (d, *J* = 2.6 Hz, 1H), 7.60 (d, *J* = 7.8 Hz, 1H), 7.51 (dd, *J* = 7.8, 2.5 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.34 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.69 (m, 1H), 1.34 (d, *J* = 7.5 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
189	^{1}H NMR (500 MHz, CDCl3) δ 7.52 (d, *J* = 8.1 Hz, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 7.10 – 7.04 (m, 1H), 4.36 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.70 (m, 1H), 1.35 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
190	^{1}H NMR (500 MHz, CDCl3) δ 7.68 (s, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.36 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.35 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
191	^{1}H NMR (500 MHz, CDCl3) δ 7.64 (d, *J* = 1.9 Hz, 1H), 7.57 (d, *J* = 8.5 Hz, 1H), 7.34 – 7.24 (m, 1H), 7.18 (t, *J* = 57.3 Hz, 1H), 4.32 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.69 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
192	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.21 (m, 1H), 7.19 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.07 (m, 3H), 4.32 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.68 (m, 1H), 2.38 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
193	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 7.04 (d, *J* = 8.3 Hz, 1H), 6.95 – 6.91 (m, 1H), 6.90 (d, *J* = 1.8 Hz, 1H), 4.33 (q, *J* = 7.6 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 2.31 (s, 3H), 2.28 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
194	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 7.10 – 7.03 (m, 2H), 7.00 (d, *J* = 2.0 Hz, 1H), 4.34 (q, *J* = 7.6 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 2.38 (s, 3H), 2.37 (s, 3H), 1.34 (d, *J* = 7.6 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
195	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 7.13 – 7.09 (m, 1H), 7.00 (d, *J* = 7.7 Hz, 2H), 4.35 (q, *J* = 7.6 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 2.31 (s, 6H), 1.36 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
196	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 6.81 (s, 2H), 4.35 (q, *J* = 7.6 Hz, 1H), 3.96 (s, 3H), 3.79 – 3.69 (m, 1H), 2.27 (s, 3H), 2.24 (s, 6H), 1.36 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
197	^{1}H NMR (500 MHz, CDCl3) δ 7.24 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.12 (m, 1H), 7.12 – 7.08 (m, 2H), 4.34 (q, *J* = 7.6 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 3.09 – 3.00 (m, 1H), 2.38 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 1.30 (d, *J* = 6.6 Hz, 3H), 1.25 (d, *J* = 6.6 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
198	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.22 (m, 1H), 7.18 (t, *J* = 57.3 Hz, 1H), 7.07 (d, *J* = 1.9 Hz, 1H), 7.00 – 6.95 (m, 1H), 4.33 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.69 (m, 1H), 3.29 – 3.17 (m, 1H), 2.37 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 1.28 (d, *J* = 6.9 Hz, 3H), 1.23 (d, *J* = 6.9 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.65 (m, 2H).
199	^{1}H NMR (500 MHz, CDCl3) δ 7.19 (t, *J* = 57.3 Hz, 1H), 7.10 (d, *J* = 2.7 Hz, 1H), 7.00 – 6.94 (m, 2H), 4.35 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.70 (m, 1H), 2.37 (d, *J* = 0.8 Hz, 3H), 1.35 (s, 3H), 1.34 (d, *J* = 6.9 Hz, 6H), 1.34 (d, *J* = 6.9 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
200	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.23 (m, 1H), 7.22 (t, *J* = 57.3 Hz, 1H), 7.17 – 7.08 (m, 1H), 7.04 (dq, *J* = 7.4, 1.0 Hz, 1H), 4.34 (q, *J* = 7.6 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 2.38 (d, *J* = 0.9 Hz, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 1.33 (s, 9H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
201	^{1}H NMR (500 MHz, CDCl3) δ 7.18 (t, *J* = 57.3 Hz, 1H), 7.12 – 7.09 (m, 1H), 7.09 – 7.05 (m, 2H), 4.33 (q, *J* = 7.6 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.69 (m, 1H), 2.96 – 2.85 (m, 1H), 2.38 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 1.30 (d, *J* = 6.6 Hz, 3H), 1.25 (d, *J* = 6.6 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
202	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.26 (m, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.21 – 7.09 (m, 3H), 4.33 (q, *J* = 7.6 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.70 (m, 1H), 2.35 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
203	^{1}H NMR (500 MHz, CDCl3) δ 7.23 (t, *J* = 57.3 Hz, 1H), 7.16 – 7.10 (m, 2H), 7.08 (dt, *J* = 8.2, 0.6 Hz, 2H), 4.32 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.69 (m, 1H), 2.38 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
204	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 7.08 – 6.99 (m, 3H), 4.32 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 2.32 (d, *J* = 0.9 Hz, 3H), 2.30 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
205	^{1}H NMR (500 MHz, CDCl3) δ 7.21 (t, *J* = 57.3 Hz, 1H), 6.97 (t, *J* = 2.3 Hz, 1H), 6.95 (d, *J* = 2.1 Hz, 2H), 4.33 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.69 (m, 1H), 2.28 (s, 6H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
206	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.30 (m, 1H), 7.30 – 7.25 (m, 1H), 7.23 (t, *J* = 57.3 Hz, 1H), 7.20 – 7.08 (m, 1H), 4.35 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.35 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
207	^{1}H NMR (500 MHz, CDCl3) δ 7.34 – 7.23 (m, 2H), 7.18 (t, *J* = 57.3 Hz, 1H), 7.05 (ddd, *J* = 8.6, 7.9, 1.8 Hz, 1H), 4.34 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
208	^{1}H NMR (500 MHz, CDCl3) δ 7.46 (dd, *J* = 5.0, 2.4 Hz, 1H), 7.36 (ddd, *J* = 7.5, 5.1, 2.6 Hz, 1H), 7.25 (t, *J* = 57.3 Hz, 1H), 7.19 –

[0124]

	7.08 (m, 1H), 4.35 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.35 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
209	^{1}H NMR (500 MHz, CDCl3) δ 7.61 (d, *J* = 2.2 Hz, 1H), 7.57 (d, *J* = 57.3 Hz, 1H), 7.52 (dd, *J* = 7.3, 2.2 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.35 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.69 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
210	^{1}H NMR (500 MHz, CDCl3) δ 7.53 (dd, *J* = 10.6, 1.3 Hz, 1H), 7.35 – 7.25 (m, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 7.18 – 7.06 (m, 1H), 4.35 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
211	^{1}H NMR (500 MHz, CDCl3) δ 7.72 (d, *J* = 1.9 Hz, 1H), 7.56 (dd, *J* = 11.4, 1.9 Hz, 1H), 7.37 (d, *J* = 11.5 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.34 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
212	^{1}H NMR (500 MHz, CDCl3) δ 7.74 (d, *J* = 1.9 Hz, 1H), 7.68 (dd, *J* = 9.5, 2.0 Hz, 1H), 7.49 (d, *J* = 9.5 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.34 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 3.21 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
213	^{1}H NMR (500 MHz, CDCl3) δ 8.03 – 7.99 (m, 1H), 7.79 – 7.73 (m, 1H), 7.50 – 7.42 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.31 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.70 (m, 1H), 3.18 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
214	^{1}H NMR (500 MHz, CDCl3) δ 7.88 (dd, *J* = 8.0, 2.0 Hz, 1H), 7.58 (dd, *J* = 7.8, 2.1 Hz, 1H), 7.50 – 7.41 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.31 (q, *J* = 7.6 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 3.20 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
215	^{1}H NMR (500 MHz, CDCl3) δ 7.92 (d, *J* = 2.2 Hz, 1H), 7.66 (dd, *J* = 9.3, 2.2 Hz, 1H), 7.57 (d, *J* = 9.4 Hz, 1H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.35 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.69 (m, 1H), 3.18 (s, 3H), 1.34 (d, *J* = 7.7 Hz, 3H), 0.78 – 0.72 (m, 2H), 0.72 – 0.67 (m, 2H).
216	^{1}H NMR (500 MHz, CDCl3) δ 7.83 – 7.76 (m, 2H), 7.57 – 7.50 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.32 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.69 (m, 1H), 3.27 (q, *J* = 9.2, 1.4 Hz, 2H), 1.34 (d, *J* = 7.7 Hz, 3H), 1.27 (t, *J* = 9.2 Hz, 3H), 0.79 – 0.72 (m, 2H), 0.72 – 0.64 (m, 2H).
217	^{1}H NMR (500 MHz, CDCl3) δ 7.83 – 7.74 (m, 2H), 7.52 – 7.44 (m, 2H), 7.21 (t, *J* = 57.3 Hz, 1H), 4.31 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.77 – 3.70 (m, 1H), 3.28 (q, *J* = 9.2, 2.6 Hz, 2H), 1.34 (d, *J* = 7.7 Hz, 3H), 1.26 (t, *J* = 9.1 Hz, 3H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
218	^{1}H NMR (500 MHz, CDCl3) δ 7.49 (d, *J* = 1.9 Hz, 1H), 7.35 – 7.29 (m, 1H), 7.28 (d, *J* = 11.1 Hz, 1H), 7.19 (t, *J* = 57.3 Hz, 1H), 4.34 (q, *J* = 7.7 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.69 (m, 1H), 2.98 – 2.90 (m, 1H), 1.34 (d, *J* = 7.7 Hz, 3H), 1.29 – 1.20 (m, 2H), 1.20 – 1.10 (m, 2H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).
219	1H NMR (500 MHz, CDCl3) δ 7.36 – 7.32 (m, 1H), 7.32 – 7.23 (m, 1H), 7.22 (t, J = 57.3 Hz, 1H), 7.21 – 7.08 (m, 1H), 4.35 (q, J = 7.7 Hz, 1H), 3.96 (s, 3H), 3.78 – 3.69 (m, 1H), 2.99 – 2.90 (m, 1H), 1.35 (d, J = 7.7 Hz, 3H), 1.28 – 1.20 (m, 2H), 1.20 – 1.13 (m, 2H), 0.77 – 0.72 (m, 2H), 0.72 – 0.66 (m, 2H).

[0125] 测试例1

[0126] 酶活性测试

[0127] 用于测定对照药剂、目标化合物对琥珀酸脱氢酶的抑制活性。

[0128] 本测试例中使用的酶为琥珀酸脱氢酶，从猪心中分离制得。

[0129] 测试方法为：总体积1.8ml，体系中含100mM的Na_2HPO_4-NaH_2PO_4缓冲液(pH为7.4)、0.3mM的EDTA、20mM琥珀酸钠、53μM的DCIP(2,6-二氯靛酚钠)，2nM的琥珀酸脱氢酶。23℃恒温水浴及600rpm磁力搅拌。在波长为600nm处监测底物DCIP光吸收的降低，采集线性范围内的实验点，即控制底物消耗不超过5%的实验点。DCIP的摩尔消光系数为21$mM^{-1}cm^{-1}$。计算在反应时间内DCIP的还原产量并拟合线性斜率，再扣掉基线斜率即为反应的初速度。

[0130] 测试结果见表2。

[0131] 表2

[0132]

化合物编号	抑制剂 (10 μM, SQR)	化合物编号	抑制剂 (10 μM, SQR)	化合物编号	抑制剂 (10 μM, SQR)
1	>90%	74	>90%	147	>90%
2	>90%	75	>90%	148	>90%
3	>90%	76	>90%	149	>90%
4	>90%	77	>90%	150	>90%
5	>90%	78	>90%	151	>90%
6	>90%	79	>90%	152	>90%
7	>90%	80	>90%	153	>90%
8	>90%	81	>90%	154	>90%
9	>90%	82	>90%	155	>90%
10	>90%	83	>90%	156	>90%

[0133]

11	>90%	84	>90%	157	>90%
12	>90%	85	>90%	158	>90%
13	>90%	86	>90%	159	>90%
14	>90%	87	>90%	160	>90%
15	>90%	88	>90%	161	>90%
16	>90%	89	>90%	162	>90%
17	>90%	90	>90%	163	>90%
18	>90%	91	>90%	164	>90%
19	>90%	92	>90%	165	>90%
20	>90%	93	>90%	166	>90%
21	>90%	94	>90%	167	>90%
22	>90%	95	>90%	168	>90%
23	>90%	96	>90%	169	>90%
24	>90%	97	>90%	170	>90%
25	>90%	98	>90%	171	>90%
26	>90%	99	>90%	172	>90%
27	>90%	100	>90%	173	>90%
28	>90%	101	>90%	174	>90%
29	>90%	102	>90%	175	>90%
30	>90%	103	>90%	176	>90%
31	>90%	104	>90%	177	>90%
32	>90%	105	>90%	178	>90%
33	>90%	106	>90%	179	>90%
34	>90%	107	>90%	180	>90%
35	>90%	108	>90%	181	>90%
36	>90%	109	>90%	182	>90%
37	>90%	110	>90%	183	>90%
38	>90%	111	>90%	184	>90%
39	>90%	112	>90%	185	>90%
40	>90%	113	>90%	186	>90%
41	>90%	114	>90%	187	>90%
42	>90%	115	>90%	188	>90%
43	>90%	116	>90%	189	>90%
44	>90%	117	>90%	190	>90%
45	>90%	118	>90%	191	>90%
46	>90%	119	>90%	192	>90%
47	>90%	120	>90%	193	>90%
48	>90%	121	>90%	194	>90%
49	>90%	122	>90%	195	>90%
50	>90%	123	>90%	196	>90%
51	>90%	124	>90%	197	>90%
52	>90%	125	>90%	198	>90%
53	>90%	126	>90%	199	>90%
54	>90%	127	>90%	200	>90%
55	>90%	128	>90%	201	>90%
56	>90%	129	>90%	202	>90%
57	>90%	130	>90%	203	>90%
58	>90%	131	>90%	204	>90%
59	>90%	132	>90%	205	>90%
60	>90%	133	>90%	206	>90%
61	>90%	134	>90%	207	>90%
62	>90%	135	>90%	208	>90%
63	>90%	136	>90%	209	>90%
64	>90%	137	>90%	210	>90%
65	>90%	138	>90%	211	>90%

[0134]

66	>90%	139	>90%	212	>90%
67	>90%	140	>90%	213	>90%
68	>90%	141	>90%	214	>90%
69	>90%	142	>90%	215	>90%
70	>90%	143	>90%	216	>90%
71	>90%	144	>90%	217	>90%
72	>90%	145	>90%	218	>90%
73	>90%	146	>90%	219	>90%

[0135] 酶活性测试结果显示，本发明提供的化合物对琥珀酸脱氢酶具有优异的抑制活性。

[0136] 测试例2

[0137] 杀菌活性测试

[0138] 用于测定对照药剂、目标化合物的杀菌活性。

[0139] 小麦白粉病(Erysiphe graminis)

[0140] 测试和调查方法参照康卓、顾宝根编写的《农药生物活性测试标准操作规范》杀菌剂卷中的SOP-SC-1116小麦白粉病盆栽法。

[0141] 黄瓜白粉病(Sphaerotheca fuliginea)

[0142] 测试和调查方法参照康卓、顾宝根编写的《农药生物活性测试标准操作规范》杀菌剂卷中的SOP-SC-1101黄瓜白粉病盆栽法。

[0143] 防效结果列于表3和表4中。

[0144] 表3

[0145]

化合物编号	小麦白粉病		
	100 mg/L	25 mg/L	6.25 mg/L
1	A	A	A
2	A	A	A
3	A	A	A
4	A	A	A
5	A	A	A
6	A	A	A
7	A	A	A
8	A	A	A
9	A	A	A
10	A	A	A
11	A	A	A
12	A	A	A
13	A	A	A
14	A	A	A
15	A	A	A
16	A	A	A
17	A	A	A
18	A	A	A
19	A	A	A
20	A	A	A
21	A	A	A
22	A	A	A
23	A	A	A
24	A	A	A
25	A	A	A
26	A	A	A
27	A	A	A
28	A	A	A

[0146]

29	A	A	A
30	A	A	A
31	A	A	A
32	A	A	A
33	A	A	A
34	A	A	B
35	A	A	B
36	A	A	A
37	A	A	B
38	A	A	B
39	A	A	A
40	A	A	A
41	A	A	A
42	A	A	A
43	A	A	A
44	A	A	A
45	A	A	A
46	A	A	A
47	A	A	A
48	A	A	A
49	A	A	A
50	A	A	A
51	A	A	A
52	A	A	A
53	A	A	A
54	A	A	A
55	A	A	A
56	A	A	A
57	A	A	A
58	A	A	A
59	A	A	A
60	A	A	A
61	A	A	A
62	A	A	A
63	A	A	A
64	A	A	A
65	A	A	A
66	A	A	A
67	A	A	A
68	A	A	A
69	A	A	A
70	A	A	A
71	A	A	A
72	A	A	A
73	A	A	A
74	A	A	A
75	A	A	A
76	A	A	A
77	A	A	A
78	A	A	A
79	A	A	A
80	A	A	A
81	A	A	A
82	A	A	A
83	A	A	A

[0147]

84	A	A	A
85	A	A	A
86	A	A	A
87	A	A	A
88	A	A	A
89	A	A	A
90	A	A	A
91	A	A	A
92	A	A	A
93	A	A	A
94	A	A	A
95	A	A	A
96	A	A	A
97	A	A	A
98	A	A	A
99	A	A	A
100	A	A	A
101	A	A	A
102	A	A	A
103	A	A	A
104	A	A	A
105	A	A	A
106	A	A	A
107	A	A	A
108	A	A	A
109	A	A	A
110	A	A	A
111	A	A	A
112	A	A	A
113	A	A	A
114	A	A	A
115	A	A	A
116	A	A	A
117	A	A	A
118	A	A	A
119	A	A	A
120	A	A	A
121	A	A	A
122	A	A	A
123	A	A	A
124	A	A	A
125	A	A	A
126	A	A	A
127	A	A	A
128	A	A	A
129	A	A	A
130	A	A	A
131	A	A	A
132	A	A	A
133	A	A	A
134	A	A	A
135	A	A	A
136	A	A	A
137	A	A	A
138	A	A	A

[0148]

139	A	A	A
140	A	A	A
141	A	A	A
142	A	A	A
143	A	A	A
144	A	A	A
145	A	A	A
146	A	A	A
147	A	A	A
148	A	A	A
149	A	A	A
150	A	A	A
151	A	A	A
152	A	A	A
153	A	A	A
154	A	A	A
155	A	A	A
156	A	A	A
157	A	A	A
158	A	A	A
159	A	A	A
160	A	A	A
161	A	A	A
162	A	A	A
163	A	A	A
164	A	A	A
165	A	A	A
166	A	A	A
167	A	A	A
168	A	A	A
169	A	A	A
170	A	A	A
171	A	A	A
172	A	A	A
173	A	A	A
174	A	A	A
175	A	A	A
176	A	A	A
177	A	A	A
178	A	A	A
179	A	A	A
180	A	A	A
181	A	A	A
182	A	A	A
183	A	A	A
184	A	A	A
185	A	A	A
186	A	A	A
187	A	A	A
188	A	A	A
189	A	A	A
190	A	A	A
191	A	A	A
192	A	A	A
193	A	A	A

[0149]

194	A	A	A
195	A	A	A
196	A	A	A
197	A	A	A
198	A	A	A
199	A	A	A
200	A	A	A
201	A	A	A
202	A	A	A
203	A	A	A
204	A	A	A
205	A	A	A
206	A	A	A
207	A	A	A
208	A	A	A
209	A	A	A
210	A	A	A
211	A	A	A
212	A	A	A
213	A	A	A
214	A	A	A
215	A	A	A
216	A	A	A
217	A	A	A
218	A	A	A
219	A	A	A
氟唑菌酰羟胺	A	A	A
烯肟菌胺	A	A	B
丙硫菌唑	A	A	B

[0150] 表3中，A和B均表示防效等级，且80％≦A≦100％；70％≦B<80％；C<70％。

[0151] 表4

[0152]

化合物编号	黄瓜白粉病
	100 mg/L
1	A
2	A
3	A
4	C
5	C
6	A
7	A
8	A
9	C
10	A
11	A
12	B
13	A
14	A
15	B
16	B
17	A
18	A
19	A
20	A

[0153]

21	B
22	A
23	A
24	A
25	A
26	A
27	A
28	A
29	A
30	A
31	A
32	B
33	A
34	A
35	A
36	A
37	B
38	B
39	B
40	B
41	A
42	A
43	A
44	A
45	A
46	A
47	A
48	A
49	A
50	A
51	A
52	A
53	B
54	A
55	A
56	A
57	A
58	A
59	A
60	A
61	A
62	A
63	A
64	A
65	A
66	A
67	A
68	A
69	A
70	A
71	A
72	A
73	A
74	A
75	A

[0154]

76	A
77	A
78	A
79	A
80	A
81	A
82	A
83	A
84	A
85	A
86	A
87	A
88	A
89	A
90	A
91	A
92	A
93	A
94	A
95	A
96	A
97	A
98	A
99	A
100	A
101	A
102	A
103	A
104	A
105	A
106	A
107	A
108	A
109	A
110	A
111	A
112	A
113	A
114	A
115	A
116	A
117	A
118	A
119	A
120	A
121	A
122	A
123	A
124	A
125	A
126	A
127	A
128	A
129	A
130	A

[0155]

131	A
132	A
133	A
134	A
135	A
136	A
137	A
138	A
139	A
140	A
141	A
142	A
143	A
144	A
145	A
146	A
147	A
148	A
149	A
150	A
151	A
152	A
153	A
154	A
155	A
156	A
157	A
158	A
159	A
160	A
161	A
162	A
163	A
164	A
165	A
166	A
167	A
168	A
169	A
170	A
171	A
172	A
173	A
174	A
175	A
176	A
177	A
178	A
179	A
180	A
181	A
182	A
183	A
184	A
185	A

[0156]

186	A
187	A
188	A
189	A
190	A
191	A
192	A
193	A
194	A
195	A
196	A
197	A
198	A
199	A
200	A
201	A
202	A
203	A
204	A
205	A
206	A
207	A
208	A
209	A
210	A
211	A
212	A
213	A
214	A
215	A
216	A
217	A
218	A
219	A
氟唑菌酰羟胺	A
烯肟菌胺	B
丙硫菌唑	B

[0157] 表4中，A和B均表示防效等级，且80％≦A≦100％；70％≦B<80％；C<70％。

[0158] 测试例3

[0159] 化合物1进行离体菌丝试验。

[0160] 首先对供试病原菌进行初步筛选。采用菌丝生长速率法测定药剂对几种供试病原菌、菌丝生长的抑制效果。在连续转接培养4d的菌落边缘打取直径为5mm的菌碟，分别将菌碟接种于含药剂浓度为25μg/mL，6.25μg/mL，1.5625μg/mL的PDA平板上，每个处理3个重复。将所有的培养皿置25℃的无菌培养箱进行培养。待空白对照菌长到培养皿直径的2/3时，采用十字交叉法测定对照及处理的菌落直径并计算菌丝生长抑制率。

[0161] 抑制率＝(对照菌落直径-处理菌落直径)/(对照菌落直径-菌饼直径)×100％

[0162] 结果如表5所示。

[0163] 表5

[0164]

化合物	浓度	抑制率（%）								
编号	μg/mL	马铃薯晚	油菜菌核	小麦赤霉	小麦纹枯	烟草赤星	番茄早疫	辣椒疫霉	西瓜枯萎	玉米大斑

[0165]

		疫								
氟唑菌酰羟胺	1.5625	A	C	A	A	A	A	B	A	A
	6.25	A	A	A	A	A	A	A	A	A
	25	A	A	A	A	A	A	A	A	A
化合物1	1.5625	A	C	A	C	A	A	B	A	A
	6.25	A	A	A	B	A	A	A	A	A
	25	A	A	A	A	A	A	A	A	A

[0166] 盆栽活体杀菌活性测试以及离体菌丝杀菌活性结果显示，本发明提供的化合物对植物真菌病害，例如小麦白粉病、黄瓜白粉病、小麦赤霉病、水稻恶苗病、油菜菌核病、玉米小斑病、小麦条锈病和黄瓜灰霉病中的至少一种均具有优异的杀菌活性，并且，大多数化合物优于商品化对照氟唑菌酰胺、烯肟菌胺和丙硫菌唑，部分化合物与目前白粉病最优的商品化药剂基本相当。

[0167] 测试例4

[0168] 化合物1进行黄瓜白粉病的田间试验

[0169] 试验按照《农药田间药效试验准则》GB/T 17980.30—2000进行。调查方法为每个小区随机取四点，每点调查2株的全部叶片。第一次施药前调查白粉病发病情况，第二次施药后7、14天分别调查白粉病发病情况，计算病情指数和防治效果。结果如表6所示。

[0170] 表6

[0171]

处理	药剂	防效%
1	化合物1为50mg/L	82
2	化合物1为100mg/L	88
3	化合物1为200mg/L	92
4	氟唑菌酰羟胺100mg/L	92
5	29%吡萘嘧菌酯悬浮剂(绿妃)100mg/L	95
6	CK	72(病情指数)

[0172] 从黄瓜白粉病的田间试验结果中可以看出，化合物1在50mg/L浓度下仍然能够维持80%以上的防治效果，在100mg/L浓度下与目前主流防治黄瓜白粉病的药剂的防效基本相当，具有极强的开发价值。

[0173] 测试例5

[0174] 化合物1进行水稻恶苗病的保护活性和治疗活性的试验

[0175] 测试和调查方法参照康卓、顾宝根编写的《农药生物活性测试标准操作规范》杀菌剂卷中的SOP-SC-1112水稻恶苗病盆栽法。

[0176] 氰烯菌酯是目前主流防治水稻恶苗病的药剂，随着长时间的使用，抗性菌株越来越多，本发明挑选了两种对氰烯菌酯表现出敏感性的菌株和一种对氰烯菌酯表现出抗性的菌株作为试验菌株。

[0177] 选取四种藤仓镰刀菌菌株SX18-32、SX18-50、SX18-59以及SX18-63用于试验菌种，同时选取目前主流商品化杀菌剂氰烯菌酯作为阳性对照。其中SX18-32、SX18-50和SX18-59对氰烯菌酯表现出敏感，SX18-63对氰烯菌酯表现出抗性。其保护活性和治疗活性列于表7和表8。

[0178] 表7:(治疗活性)测试浓度为5μg/mL(溶剂为DMSO)

[0179]

样品 菌株	化合物1	氰烯菌酯
SX18-63 (R)	83.3%	0
SX18-32 (S)	60.2%	23.8%
SX18-59 (S)	96.8%	50.0%

[0180] 表8:(保护活性)测试浓度为5μg/mL(溶剂为DMSO)

[0181]

样品 菌株	化合物1	氰烯菌酯
SX18-63 (R)	93.7%	19.6%
SX18-32 (S)	97.4%	83.6%
SX18-59 (S)	100.0%	58.8%

[0182] 从治疗活性的测试中,可以明显看出本发明的化合物1特别对于抗性菌株SX18-63(R)的治疗效果远优于氰烯菌酯,氰烯菌酯对抗性菌株几乎无治疗活性,另外对于敏感性的菌株,氰烯菌酯最多也只有50%左右的治疗效果,而本发明的化合物1对SX18-59(S)表现出96.8%的强治疗效果。

[0183] 对于保护活性的测试中,本发明的化合物1对于三种菌株的保护活性均在90%以上,接近完全保护,同样远优于氰烯菌酯。

[0184] 综合来看,本发明的化合物1对水稻恶苗病无论治疗活性还是保护活性均优于目前主流药剂氰烯菌酯,表现出巨大的开发前景。

[0185] 以上详细描述了本发明的优选实施方式,但是,本发明并不限于此。在本发明的技术构思范围内,可以对本发明的技术方案进行多种简单变型,包括各个技术特征以任何其它的合适方式进行组合,这些简单变型和组合同样应当视为本发明所公开的内容,均属于本发明的保护范围。