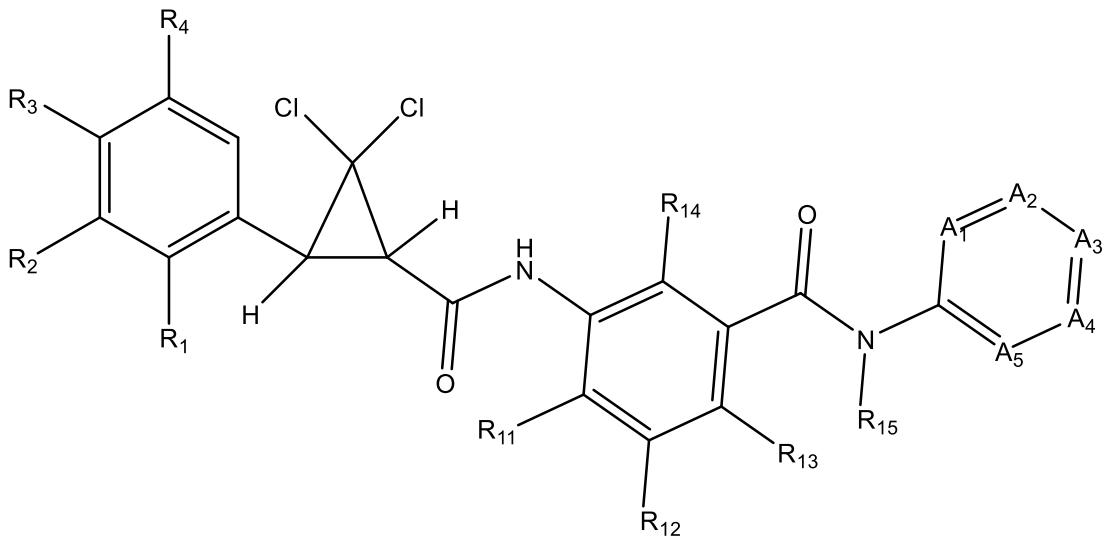
In one aspect, there is provided use of a Compound of Formula (I)



Formula (I)

and N-oxides, veterinary acceptable acid addition salts, solvates, crystal polymorphs, isotopes, stereoisomers, and tautomers thereof,

in the manufacture of a medicament for the treatment or control of a parasitic infestation of an animal, wherein

A_1 is CR_5, N=O, or N;

A_2 is CR_6, N=O, or N;

A_3 is CR_7, N=O, or N;

A_4 is CR_8, N=O or N;

A_5 is CR_9, N=O or N;

wherein no more than 3 of A_1, A_2, A_3, A_4, A_5 are N or N=O;

R^1 is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, $(C_1$-$C_6)$alkyl, $(C_3$-$C_6)$cycloalkyl, $(C_2$-$C_6)$alkenyl, $(C_3$-$C_6)$cycloalkenyl, $(C_2$-$C_6)$alkynyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$haloalkyl, $(C_3$-$C_6)$halocycloalkyl, $(C_2$-$C_6)$haloalkenyl, $(C_3$-$C_6)$halocycloalkenyl, $(C_1$-$C_6)$haloalkoxy, $S(C_1$-$C_6)$alkyl, $S(O)(C_1$-$C_6)$alkyl, $S(O)_2(C_1$-$C_6)$alkyl, $S(C_1$-$C_6)$haloalkyl, $S(O)(C_1$-$C_6)$haloalkyl, $S(O)_2(C_1$-$C_6)$haloalkyl, $(C_1$-$C_6)$alkyl-$S(O)_2NH_2$, and $(C_1$-$C_6)$haloalkyl-$S(O)_2NH_2$;

R^2 is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, $(C_1$-$C_6)$alkyl, $(C_3$-$C_6)$cycloalkyl, $(C_2$-$C_6)$alkenyl, $(C_3$-$C_6)$cycloalkenyl, $(C_2$-$C_6)$alkynyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$haloalkyl, $(C_3$-$C_6)$halocycloalkyl, $(C_2$-$C_6)$haloalkenyl, $(C_3$-$C_6)$halocycloalkenyl, $(C_1$-$C_6)$haloalkoxy, $S(C_1$-$C_6)$alkyl, $S(O)(C_1$-$C_6)$alkyl, $S(O)_2(C_1$-$C_6)$alkyl, $S(C_1$-$C_6)$haloalkyl, $S(O)(C_1$-$C_6)$haloalkyl, $S(O)_2(C_1$-$C_6)$haloalkyl, $(C_1$-$C_6)$alkyl-$S(O)_2NH_2$, and $(C_1$-$C_6)$haloalkyl-$S(O)_2NH_2$ and S-$(Halo)_5$;

R^3 is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, $(C_1$-$C_6)$alkyl, $(C_3$-$C_6)$cycloalkyl, $(C_2$-$C_6)$alkenyl, $(C_3$-$C_6)$cycloalkenyl, $(C_2$-$C_6)$alkynyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$haloalkyl, $(C_3$-$C_6)$halocycloalkyl, $(C_2$-$C_6)$haloalkenyl, $(C_3$-$C_6)$halocycloalkenyl, $(C_1$-$C_6)$haloalkoxy, $S(C_1$-$C_6)$alkyl, $S(O)(C_1$-$C_6)$alkyl, $S(O)_2(C_1$-$C_6)$alkyl, $S(C_1$-$C_6)$haloalkyl, $S(O)(C_1$-$C_6)$haloalkyl, $S(O)_2(C_1$-$C_6)$haloalkyl, $(C_1$-$C_6)$alkyl-$S(O)_2NH_2$, and $(C_1$-$C_6)$haloalkyl-$S(O)_2NH_2$ and S-$(Halo)_5$;

R^4 is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, $(C_1$-$C_6)$alkyl, $(C_3$-$C_6)$cycloalkyl, $(C_2$-$C_6)$alkenyl, $(C_3$-$C_6)$cycloalkenyl, $(C_2$-$C_6)$alkynyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$haloalkyl, $(C_3$-$C_6)$halocycloalkyl, $(C_2$-$C_6)$haloalkenyl, $(C_3$-$C_6)$halocycloalkenyl, $(C_1$-$C_6)$haloalkoxy, $S(C_1$-$C_6)$alkyl, $S(O)(C_1$-$C_6)$alkyl, $S(O)_2(C_1$-$C_6)$alkyl, $S(C_1$-$C_6)$haloalkyl, $S(O)(C_1$-$C_6)$haloalkyl, $S(O)_2(C_1$-$C_6)$haloalkyl, $(C_1$-$C_6)$alkyl-$S(O)_2NH_2$, and $(C_1$-$C_6)$haloalkyl-$S(O)_2NH_2$ and S-$(Halo)_5$;

R^5 is selected from the group consisting of H, F, Cl, Br, I, H, CN, CHO, NHOH, NO, NO_2, OH, NH_2, =O, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkylphenyl, $(C_1$-$C_6)$alkyl-$S(O)_2NH_2$, $(C_1$-$C_6)$haloalkoxy, $(C_1$-$C_6)$haloalkyl, $(C_1$-$C_6)$haloalkyl-$S(O)_2NH_2$, $(C_2$-$C_6)$alkenyl, $(C_2$-$C_6)$alkynyl, $(C_2$-$C_6)$haloalkenyl, $(C_3$-$C_6)$cycloalkenyl, $(C_3$-$C_6)$cycloalkyl, $(C_3$-$C_6)$halocycloalkenyl, $(C_3$-$C_6)$halocycloalkyl, $(C_1$-$C_6)$alkyl($(C_1$-$C_6)$alkyl)(=NO$(C_1$-$C_6)$alkyl), C(=NO$(C_1$-$C_6)$alkyl)$(C_1$-$C_6)$alkyl, C(=O)$(C_1$-$C_6)$alkyl, C(=O)NH$(C_1$-$C_6)$alkyl, C(=O)NHphenyl, C(=O)O$(C_1$-$C_6)$alkyl, CH(=NO$(C_1$-$C_6)$alkyl), imidazolyl, N($(C_1$-$C_6)$alkyl)C(=O)$(C_1$-$C_6)$alkyl), N($(C_1$-$C_6)$alkyl)C(=O)$(C_1$-$C_6)$alkyl-O$(C_1$-$C_6)$alkyl), N($(C_1$-$C_6)$alkyl)C(=O)$(C_1$-$C_6)$haloalkyl), N($(C_1$-$C_6)$alkyl)C(=O)O$(C_1$-$C_6)$alkyl), N($(C_1$-$C_6)$alkyl)$_2$, N(C(=O)O$(C_1$-$C_6)$alkyl)$_2$, N=CH-phenyl, NH($(C_1$-$C_6)$alkylC(=O)$(C_1$-$C_6)$alkyl), NHC(=O)R^{10}, N$(C_1$-$C_6)$alkyl-C(=O)lR^{10}, NH$(C_1$-$C_6)$alkyl, NH$(C_1$-$C_6)$alkenyl, NH$(C_1$-$C_6)$alkynyl, NH$(C_1$-$C_6)$alkylphenyl, NH$(S(O)_2(C_1$-$C_6)$alkyl), NH-C(=O)O$(C_1$-$C_6)$alkyl, oxazolyl, phenyl, pyrazolyl, pyridinyl, S(=NCN)($(C_1$-$C_6)$alkyl), S$(C_1$-$C_6)$alkyl, S$(C_1$-$C_6)$haloalkyl, S(O)(=NCN)($(C_1$-$C_6)$alkyl), S(O)$(C_1$-$C_6)$alkyl, S(O)$(C_1$-$C_6)$haloalkyl, S$(O)_2(C_1$-$C_6)$alkyl, S$(O)_2(C_1$-$C_6)$haloalkyl, SCN, thiazolyl, thienyl, and triazolyl,

wherein each alkoxy, alkyl, haloalkoxy, haloalkyl, alkenyl, alkynyl, haloalkenyl, cycloalkenyl, cycloalkyl, halocycloalkenyl, halocycloalkyl, imidazolyl, phenyl, pyrazolyl, pyridinyl, thiazolyl, thienyl, and triazolyl, may be optionally substituted with one or more substituents selected from the group consisting of F, Cl, Br, I, CN, OH, NH$(C_1$-$C_6)$alkyl, NH$(C_3$-$C_6)$cycloalkylCH$_2$O$(C_1$-$C_6)$alkyl, NH$(C_3$-$C_6)$cycloalkylCH$_2$O$(C_1$-$C_6)$haloalkyl, NHCH$_2(C_3$-$C_6)$cycloalkyl, NH_2, NO_2, oxo, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, and C(=O)O-$(C_1$-$C_6)$alkyl;

R^6 is selected from the group consisting of F, Cl, Br, I, H, CN, CHO, NHOH, NO, NO_2, OH, NH_2, =O, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkylphenyl, $(C_1$-$C_6)$alkyl-$S(O)_2NH_2$, $(C_1$-$C_6)$haloalkoxy, $(C_1$-$C_6)$haloalkyl, $(C_1$-$C_6)$haloalkyl-$S(O)_2NH_2$, $(C_2$-$C_6)$alkenyl, $(C_2$-$C_6)$alkynyl, $(C_2$-$C_6)$haloalkenyl, $(C_3$-$C_6)$cycloalkenyl, $(C_3$-$C_6)$cycloalkyl, $(C_3$-$C_6)$halocycloalkenyl, $(C_3$-$C_6)$halocycloalkyl, $(C_1$-$C_6)$alkyl($(C_1$-$C_6)$alkyl)(=NO$(C_1$-$C_6)$alkyl), C(=NO$(C_1$-$C_6)$alkyl)$(C_1$-$C_6)$alkyl, C(=O)$(C_1$-$C_6)$alkyl, C(=O)NH$(C_1$-$C_6)$alkyl, C(=O)NHphenyl, C(=O)O$(C_1$-$C_6)$alkyl, CH(=NO$(C_1$-$C_6)$alkyl), imidazolyl, N($(C_1$-$C_6)$alkyl)C(=O)$(C_1$-$C_6)$alkyl), N($(C_1$-$C_6)$alkyl)C(=O)$(C_1$-$C_6)$alkyl-O$(C_1$-$C_6)$alkyl), N($(C_1$-$C_6)$alkyl)C(=O)$(C_1$-$C_6)$haloalkyl), N($(C_1$-$C_6)$alkyl)C(=O)O$(C_1$-$C_6)$alkyl), N($(C_1$-$C_6)$alkyl)$_2$, N(C(=O)O$(C_1$-$C_6)$alkyl)$_2$, N=CH-phenyl, NH($(C_1$-$C_6)$alkylC(=O)$(C_1$-$C_6)$alkyl), NHC(=O)R^{10}, N$(C_1$-$C_6)$alkyl-C(=O)lR^{10}, NH$(C_1$-$C_6)$alkyl, NH$(C_1$-$C_6)$alkenyl, NH$(C_1$-$C_6)$alkynyl, NH$(C_1$-$C_6)$alkylphenyl, NH$(S(O)_2(C_1$-$C_6)$alkyl), NH-C(=O)O$(C_1$-$C_6)$alkyl, oxazolyl, phenyl, pyrazolyl, pyridinyl, S(=NCN)($(C_1$-$C_6)$alkyl), S$(C_1$-$C_6)$alkyl, S$(C_1$-$C_6)$haloalkyl, S(O)(=NCN)($(C_1$-$C_6)$alkyl), S(O)$(C_1$-$C_6)$alkyl, S(O)$(C_1$-$C_6)$haloalkyl, S$(O)_2(C_1$-$C_6)$alkyl, S$(O)_2(C_1$-$C_6)$haloalkyl, SCN, thiazolyl, thienyl, and triazolyl,

wherein each alkoxy, alkyl, haloalkoxy, haloalkyl, alkenyl, alkynyl, haloalkenyl, cycloalkenyl, cycloalkyl, halocycloalkenyl, halocycloalkyl, imidazolyl, phenyl, pyrazolyl, pyridinyl, thiazolyl, thienyl, and triazolyl, may be optionally substituted with one or more substituents selected from the group consisting of F, Cl, Br, I, CN, OH, NH$(C_1$-$C_6)$alkyl, NH$(C_3$-$C_6)$cycloalkylCH$_2$O$(C_1$-$C_6)$alkyl, NH$(C_3$-$C_6)$cycloalkylCH$_2$O$(C_1$-$C_6)$haloalkyl, NHCH$_2(C_3$-$C_6)$cycloalkyl, NH_2, NO_2, oxo, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, and C(=O)O-$(C_1$-$C_6)$alkyl;

R^7 is selected from the group consisting of F, Cl, Br, I, H, CN, CHO, NHOH, NO, NO_2, OH, NH_2, =O, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkylphenyl, $(C_1$-$C_6)$alkyl-$S(O)_2NH_2$, $(C_1$-$C_6)$haloalkoxy, $(C_1$-$C_6)$haloalkyl, $(C_1$-$C_6)$haloalkyl-$S(O)_2NH_2$, $(C_2$-$C_6)$alkenyl, $(C_2$-$C_6)$alkynyl, $(C_2$-$C_6)$haloalkenyl, $(C_3$-$C_6)$cycloalkenyl, $(C_3$-$C_6)$cycloalkyl, $(C_3$-$C_6)$halocycloalkenyl, $(C_3$-$C_6)$halocycloalkyl, $(C_1$-$C_6)$alkyl($(C_1$-$C_6)$alkyl)(=NO$(C_1$-$C_6)$alkyl), C(=NO$(C_1$-$C_6)$alkyl)$(C_1$-$C_6)$alkyl, C(=O)$(C_1$-$C_6)$alkyl, C(=O)NH$(C_1$-$C_6)$alkyl, C(=O)NHphenyl, C(=O)O$(C_1$-$C_6)$alkyl, CH(=NO$(C_1$-$C_6)$alkyl), imidazolyl, N($(C_1$-$C_6)$alkyl)C(=O)$(C_1$-$C_6)$alkyl), N($(C_1$-$C_6)$alkyl)C(=O)$(C_1$-$C_6)$alkyl-O$(C_1$-$C_6)$alkyl), N($(C_1$-$C_6)$alkyl)C(=O)$(C_1$-$C_6)$haloalkyl), N($(C_1$-$C_6)$alkyl)C(=O)O$(C_1$-$C_6)$alkyl), N($(C_1$-$C_6)$alkyl)$_2$, N(C(=O)O$(C_1$-$C_6)$alkyl)$_2$, N=CH-phenyl, NH($(C_1$-$C_6)$alkylC(=O)$(C_1$-$C_6)$alkyl), NHC(=O)R^{10}, N$(C_1$-

C_6)alkyl-C(=O)lR^{10}, NH(C_1-C_6)alkyl, NH(C_1-C_6)alkenyl, NH(C_1-C_6)alkynyl, NH(C_1-C_6)alkylphenyl, NH($S(O)_2$(C_1-C_6)alkyl), NH-C(=O)O(C_1-C_6)alkyl, oxazolyl, phenyl, pyrazolyl, pyridinyl, S(=NCN)((C_1-C_6)alkyl), S(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(=NCN)((C_1-C_6)alkyl), S(O)(C_1-C_6)alkyl, S(O)(C_1-C_6)haloalkyl, $S(O)_2$(C_1-C_6)alkyl, $S(O)_2$(C_1-C_6)haloalkyl, SCN, thiazolyl, thienyl, and triazolyl,

wherein each alkoxy, alkyl, haloalkoxy, haloalkyl, alkenyl, alkynyl, haloalkenyl, cycloalkenyl, cycloalkyl, halocycloalkenyl, halocycloalkyl, imidazolyl, phenyl, pyrazolyl, pyridinyl, thiazolyl, thienyl, and triazolyl, may be optionally substituted with one or more substituents selected from the group consisting of F, Cl, Br, I, CN, OH, NH(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH_2O(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH_2O(C_1-C_6)haloalkyl, NHCH_2(C_3-C_6)cycloalkyl, NH_2, NO_2, oxo, (C_1-C_6)alkyl, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, and C(=O)O-(C_1-C_6)alkyl;

R^8 is selected from the group consisting of F, Cl, Br, I, H, CN, CHO, NHOH, NO, NO_2, OH, NH_2, =O, (C_1-C_6)alkoxy, (C_1-C_6)alkyl, (C_1-C_6)alkylphenyl, (C_1-C_6)alkyl-S($O)_2NH_2$, (C_1-C_6)haloalkoxy, (C_1-C_6)haloalkyl, (C_1-C_6)haloalkyl-S($O)_2NH_2$, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_2-C_6)haloalkenyl, (C_3-C_6)cycloalkenyl, (C_3-C_6)cycloalkyl, (C_3-C_6)halocycloalkenyl, (C_3-C_6)halocycloalkyl, (C_1-C_6)alkyl((C_1-C_6)alkyl)(=NO(C_1-C_6)alkyl), C(=NO(C_1-C_6)alkyl)(C_1-C_6)alkyl, C(=O)(C_1-C_6)alkyl, C(=O)NH(C_1-C_6)alkyl, C(=O)NHphenyl, C(=O)O(C_1-C_6)alkyl, CH(=NO(C_1-C_6)alkyl), imidazolyl, N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl-O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)haloalkyl), N((C_1-C_6)alkyl)(C(=O)O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)$_2$, N(C(=O)O(C_1-C_6)alkyl)$_2$, N=CH-phenyl, NH((C_1-C_6)alkylC(=O)(C_1-C_6)alkyl), NHC(=O)R^{10}, N(C_1-C_6)alkyl-C(=O)lR^{10}, NH(C_1-C_6)alkyl, NH(C_1-C_6)alkenyl, NH(C_1-C_6)alkynyl, NH(C_1-C_6)alkylphenyl, NH($S(O)_2$(C_1-C_6)alkyl), NH-C(=O)O(C_1-C_6)alkyl, oxazolyl, phenyl, pyrazolyl, pyridinyl, S(=NCN)((C_1-C_6)alkyl), S(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(=NCN)((C_1-C_6)alkyl), S(O)(C_1-C_6)alkyl, S(O)(C_1-C_6)haloalkyl, $S(O)_2$(C_1-C_6)alkyl, $S(O)_2$(C_1-C_6)haloalkyl, SCN, thiazolyl, thienyl, and triazolyl,

wherein each alkoxy, alkyl, haloalkoxy, haloalkyl, alkenyl, alkynyl, haloalkenyl, cycloalkenyl, cycloalkyl, halocycloalkenyl, halocycloalkyl, imidazolyl, phenyl, pyrazolyl, pyridinyl, thiazolyl, thienyl, and triazolyl, may be optionally substituted with one or more substituents selected from the group consisting of F, Cl, Br, I, CN, OH, NH(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH_2O(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH_2O(C_1-C_6)haloalkyl, NHCH_2(C_3-C_6)cycloalkyl, NH_2, NO_2, oxo, (C_1-C_6)alkyl, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, and C(=O)O-(C_1-C_6)alkyl;

R^9 is selected from the group consisting of F, Cl, Br, I, H, CN, CHO, NHOH, NO, NO_2, OH, NH_2, =O, (C_1-C_6)alkoxy, (C_1-C_6)alkyl, (C_1-C_6)alkylphenyl, (C_1-C_6)alkyl-S($O)_2NH_2$, (C_1-C_6)haloalkoxy, (C_1-C_6)haloalkyl, (C_1-C_6)haloalkyl-S($O)_2NH_2$, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_2-C_6)haloalkenyl, (C_3-C_6)cycloalkenyl, (C_3-C_6)cycloalkyl, (C_3-C_6)halocycloalkenyl, (C_3-C_6)halocycloalkyl, (C_1-C_6)alkyl((C_1-C_6)alkyl)(=NO(C_1-C_6)alkyl), C(=NO(C_1-C_6)alkyl)(C_1-C_6)alkyl, C(=O)(C_1-C_6)alkyl, C(=O)NH(C_1-C_6)alkyl, C(=O)NHphenyl, C(=O)O(C_1-C_6)alkyl, CH(=NO(C_1-C_6)alkyl), imidazolyl, N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl-O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)haloalkyl), N((C_1-C_6)alkyl)(C(=O)O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)$_2$, N(C(=O)O(C_1-C_6)alkyl)$_2$, N=CH-phenyl, NH((C_1-C_6)alkylC(=O)(C_1-C_6)alkyl), NHC(=O)R^{10}, N(C_1-C_6)alkyl-C(=O)lR^{10}, NH(C_1-C_6)alkyl, NH(C_1-C_6)alkenyl, NH(C_1-C_6)alkynyl, NH(C_1-C_6)alkylphenyl, NH($S(O)_2$(C_1-C_6)alkyl), NH-C(=O)O(C_1-C_6)alkyl, oxazolyl, phenyl, pyrazolyl, pyridinyl, S(=NCN)((C_1-C_6)alkyl), S(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(=NCN)((C_1-C_6)alkyl), S(O)(C_1-C_6)alkyl, S(O)(C_1-C_6)haloalkyl, $S(O)_2$(C_1-C_6)alkyl, $S(O)_2$(C_1-C_6)haloalkyl, SCN, thiazolyl, thienyl, and triazolyl,

wherein each alkoxy, alkyl, haloalkoxy, haloalkyl, alkenyl, alkynyl, haloalkenyl, cycloalkenyl, cycloalkyl, halocycloalkenyl, halocycloalkyl, imidazolyl, phenyl, pyrazolyl, pyridinyl, thiazolyl, thienyl, and triazolyl, may be optionally substituted with one or more substituents selected from the group consisting of F, Cl, Br, I, CN, OH, NH(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH_2O(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH_2O(C_1-C_6)haloalkyl, NHCH_2(C_3-C_6)cycloalkyl, NH_2, NO_2, oxo, (C_1-C_6)alkyl, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, and C(=O)O-(C_1-C_6)alkyl;

or **R^6** and **R^7** together with the atoms to which they are attached form a 5 or 6- atoms containing ring, wherein the ring-forming atoms are selected from the group consisting of -CH_2-, -CH=, =CH-,-N=,

=N-, -NH-, -O-, -S(O)-, -S(O)$_2$- and -S-, wherein the ring formed by **R^6** and **R^7** is optionally substituted with one or more substituents of selected from the group consisting of (C_1-C_3)alkyl, F, Cl, Br, I, CN, NO_2, and =O;

or **R^7** and **R^8** together with the atoms to which they are attached form a 5 or 6- atoms containing ring, wherein the ring-forming atoms are selected from the group consisting of -CH_2-, -CH=, =CH-,-N=, =N-, -NH-, -O-, -S(O)-, -S(O)$_2$- and -S-, wherein the ring formed by **R^7** and **R^8** is optionally substituted with one or more substituents of selected from the group consisting of (C_1-C_3)alkyl, F, Cl, Br, I, CN, NO_2, and =O;

R^{10} is selected from the group consisting of H, (C_1-C_6)alkyl, C_3-C_6)cycloalkyl), (C_1-C_6)alkyloxy-(C_1-C_6)-alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_1-C_6)haloalkyl, (C_1-C_6)alkyloxy-(C_1-C_6)haloalkyl, C_1-C_6)alkyloxy-(C_2-C_6)-alkenyl, (C_1-C_6)alkyl-(C_3-C_6)cycloalkyl, heterocycle, aryl and (C_1-C_6)alkylphenyl;

R^{11} is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, (C_1-C_6)alkyl, (C_3-C_6)cycloalkyl, (C_2-C_6)alkenyl, (C_3-C_6)cycloalkenyl, (C_2-C_6)alkynyl, (C_1-C_6)alkoxy, (C_1-C_6)haloalkyl, (C_3-C_6)halocycloalkyl, (C_2-C_6)haloalkenyl, (C_3-C_6)halocycloalkenyl, (C_1-C_6)haloalkoxy, S(C_1-C_6)alkyl, S(O)(C_1-C_6)alkyl, S(O)$_2$(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(C_1-C_6)haloalkyl, S(O)$_2$(C_1-C_6)haloalkyl, (C_1-C_6)alkyl-S(O)$_2$$NH_2$, and ($C_1$-$C_6$)haloalkyl-S(O)$_2$$NH_2$;

R^{12} is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, (C_1-C_6)alkyl, (C_3-C_6)cycloalkyl, (C_2-C_6)alkenyl, (C_3-C_6)cycloalkenyl, (C_2-C_6)alkynyl, (C_1-C_6)alkoxy, (C_1-C_6)haloalkyl, (C_3-C_6)halocycloalkyl, (C_2-C_6)haloalkenyl, (C_3-C_6)halocycloalkenyl, (C_1-C_6)haloalkoxy, S(C_1-C_6)alkyl, S(O)(C_1-C_6)alkyl, S(O)$_2$(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(C_1-C_6)haloalkyl, S(O)$_2$(C_1-C_6)haloalkyl, (C_1-C_6)alkyl-S(O)$_2$$NH_2$, and ($C_1$-$C_6$)haloalkyl-S(O)$_2$$NH_2$;

R^{13} is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, CHO, (C_1-C_6)alkyl, (C_3-C_6)cycloalkyl, (C_2-C_6)alkenyl, (C_3-C_6)cycloalkenyl, (C_2-C_6)alkynyl, (C_1-C_6)alkoxy, (C_1-C_6)haloalkyl, (C_3-C_6)halocycloalkyl, (C_2-C_6)haloalkenyl, (C_3-C_6)halocycloalkenyl, (C_1-C_6)haloalkoxy, S(C_1-C_6)alkyl, S(O)(C_1-C_6)alkyl, S(O)$_2$(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(C_1-C_6)haloalkyl, S(O)$_2$(C_1-C_6)haloalkyl, (C_1-C_6)alkyl-S(O)$_2$$NH_2$, ($C_1$-$C_6$)haloalkyl-S(O)$_2$$NH_2$, and triazolyl;

R^{14} is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, (C_1-C_6)alkyl, (C_3-C_6)cycloalkyl, (C_2-C_6)alkenyl, (C_3-C_6)cycloalkenyl, (C_2-C_6)alkynyl, (C_1-C_6)alkoxy, (C_1-C_6)haloalkyl, (C_3-C_6)halocycloalkyl, (C_2-C_6)haloalkenyl, (C_3-C_6)halocycloalkenyl, (C_1-C_6)haloalkoxy, S(C_1-C_6)alkyl, S(O)(C_1-C_6)alkyl, S(O)$_2$(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(C_1-C_6)haloalkyl, S(O)$_2$(C_1-C_6)haloalkyl, (C_1-C_6)alkyl-S(O)$_2$$NH_2$, and ($C_1$-$C_6$)haloalkyl-S(O)$_2$$NH_2$;

R^{15} is selected from the group consisting of H, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_1-C_6)haloalkyl**,** (C_1-C_6)alkoxy(C_1-C_6)alkyl, C(=O)(C_1-C_6)alkyl, and (C_1-C_6)alkoxyC(=O)(C_1-C_6)alkyl

H, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_1-C_6)haloalkyl**;**

wherein at least one of R^5, R^6, R^7, R^8, R^9, is a substituent selected from the group consisting of F, Cl, Br, and I.

Suitably the compound and use according to disclosure and/or any example thereof

R^1 is selected from the group consisting of H F, and Cl;

R^2 is selected from the group consisting of H, F, and Cl;

R^3 is selected from the group consisting of H, F, and Cl;

R^4 is selected from the group consisting of H, F, and Cl;

The disclosure is also understood to include the use of compounds of the disclosure and/or examples thereof as described in this application in the manufacture of a medicament for the protection of animals from parasite infestation.

The compounds of the disclosure and/or examples thereof are suitably used in a method to treat or control an ectoparasite infestation.

Suitably the compounds of the disclosure and/or examples thereof are used in a method, wherein the parasitic infestation is a tick infestation or flea infestation. The compounds are suitably used for a tick infestation.

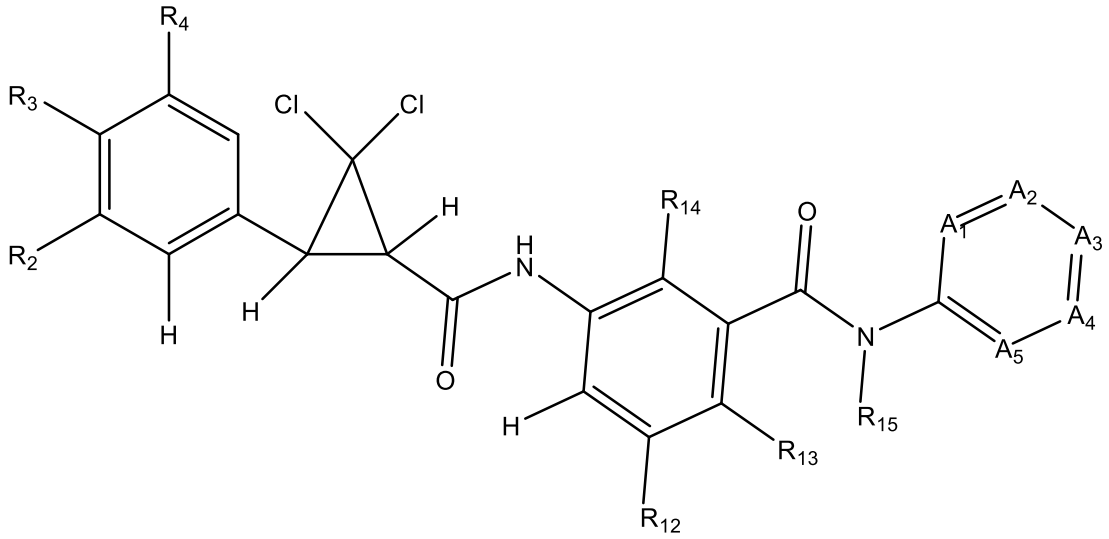
The compounds of the disclosure and/or examples thereof are suitably used against parasites wherein the parasite is a one host tick or a multi-host tick. Suitably the compounds of the disclosure are used against *Rhipicephalus microplus*.

In a suitable use or method of the disclosure and/or any example thereof, the animal is a warm-blooded animal such as a mammal. Suitably, the compounds are also active in a livestock animal, such as a ruminant, bovine animal, or cattle. It was also found that the compounds are active in fish, against a sea lice infestation. Also the compounds are found active in a companion animal, such as a canine animal or a feline animal, especially a dog or cat.

In a suitable use or method of the disclosure and/or any example thereof, the animal is protected from a parasite infestation. Preferably an existing parasite infestation of the animal is treated or controlled.

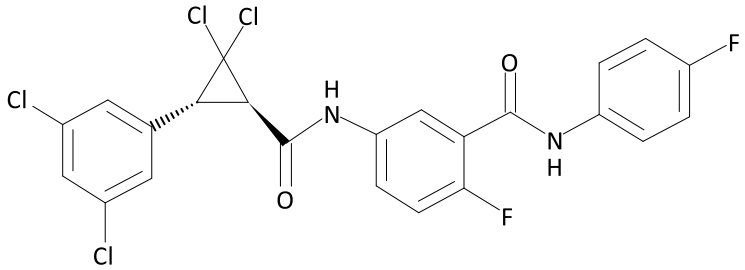
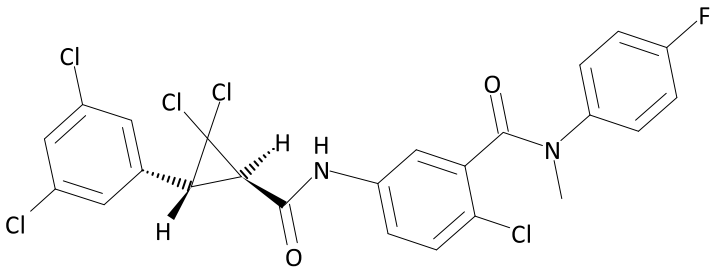
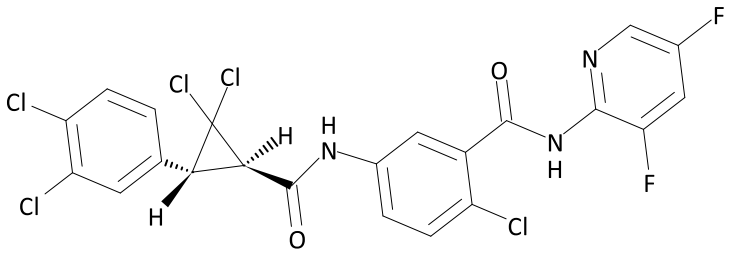
In a suitable use or method of the disclosure and/or any example thereof, the method comprises administering the compound to an animal weekly, bi-weekly, monthly, every 6 weeks, every 2 months or every 3 months.

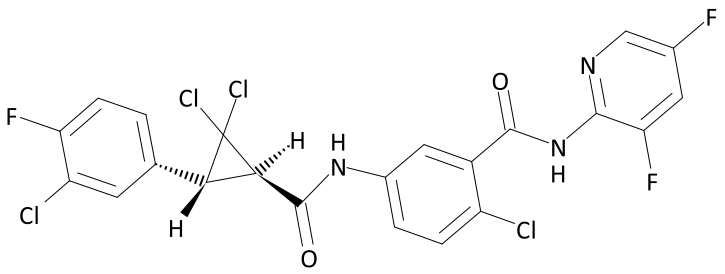
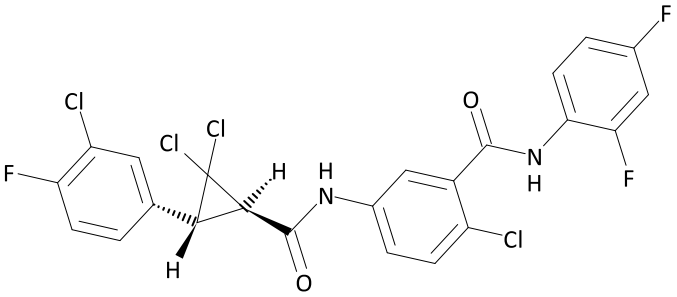
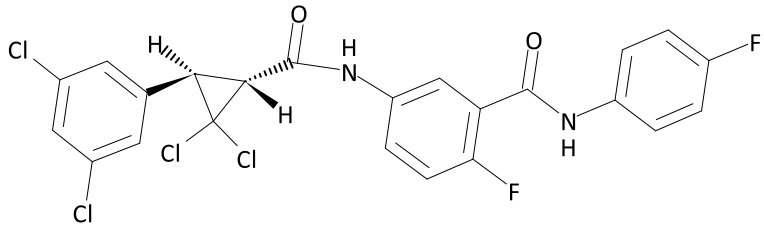
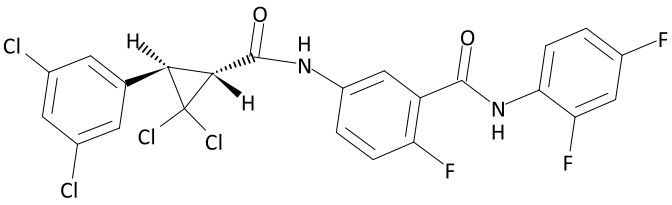
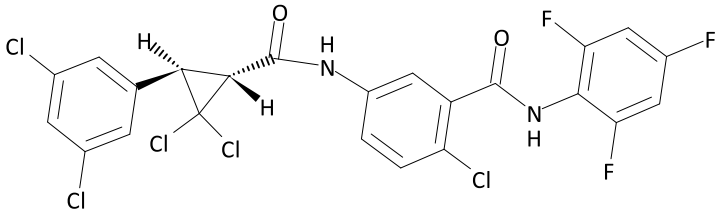
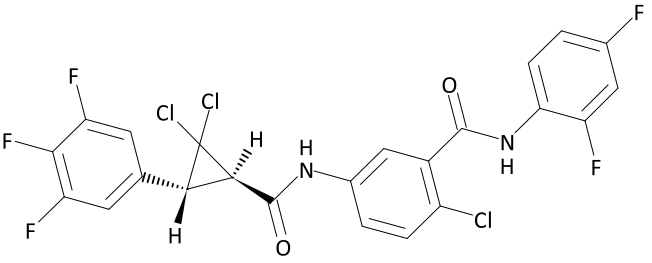
In another aspect, there is provided use of a Compound of Formula (III)

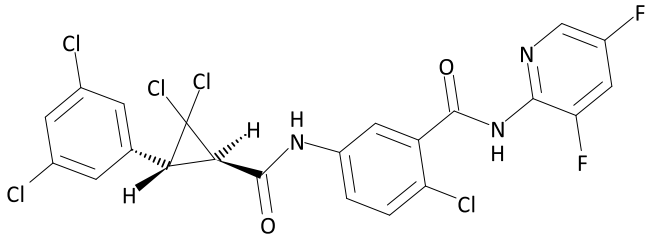
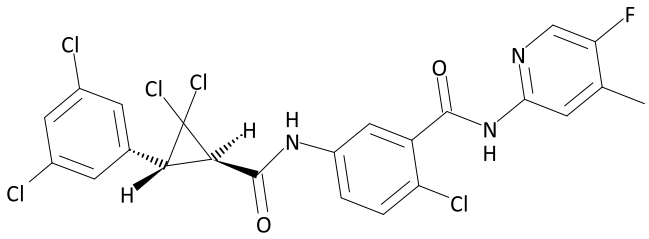
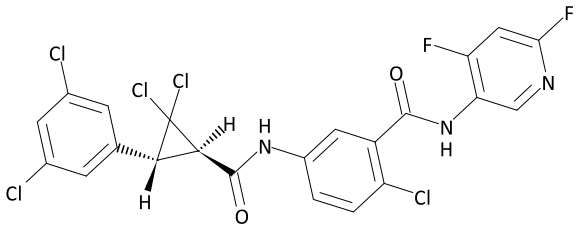
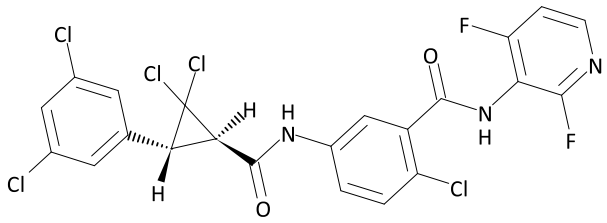
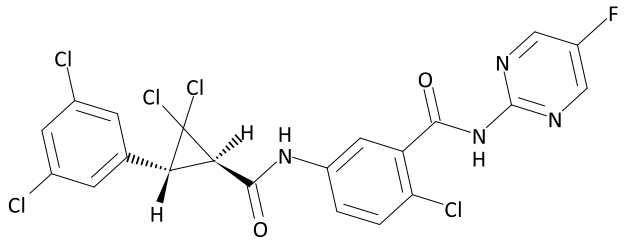
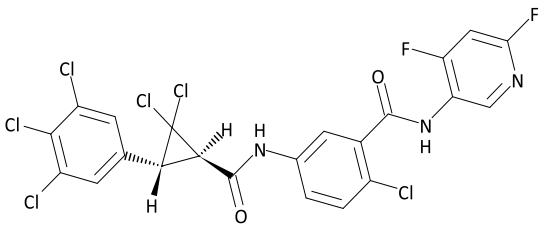


Formula (III)

and N-oxides, veterinary acceptable acid addition salts, solvates, crystal polymorphs, isotopes, stereoisomers, and tautomers thereof in the manufacture of a medicament for the treatment or control of a parasitic infestation of an animal as defined herein, wherein the compound is selected from the group consisting of

#	Compound
4	
51	
86	

89	
197	
446	
447	
449	
451	

453	
454	
455	
456	
460	
466	

The disclosure is also directed to a veterinary composition comprising an effective amount of a compound of Formula (I)-(XCII) as defined in any embodiment described herein and an inert carrier or formulation adjuvant. In another aspect, there is provided a veterinary composition comprising an effective amount of a compound of Formula (I) as defined herein or a compound of Formula (III) as defined herein and an inert carrier or formulation adjuvant, wherein the carrier is a pharmaceutically acceptable oily carrier comprising a fatty acid ester which is a glycol diester or a glycerol triester of a C_{8-10} fatty acid.

The composition is suitable for use in the treatment and control of a parasitic infestation of animals such as described herein.

Suitably the veterinary composition is a topical composition, an oral composition, or an injection composition.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows Plasma concentration of oily solution (Composition A) and volatile solution (Composition B) of compound 453.

Figure 2 shows a comparison of concentrations of Compound 453 in the blood of cattle with no CPE (Composition C) and three different CPEs (Compositions D, E, and F) showing no significant improvement with the inclusion of any CPE.

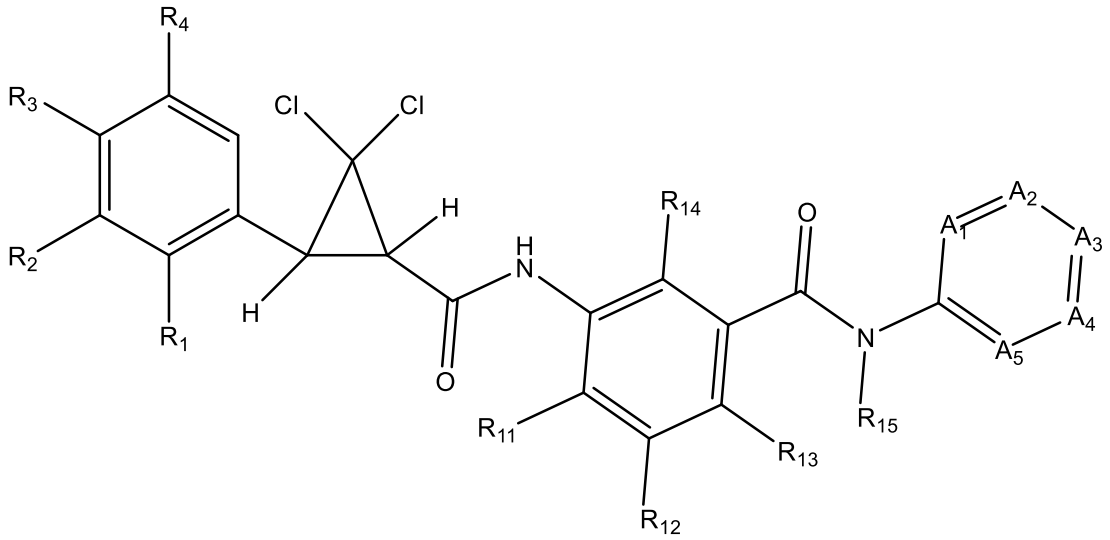
Figure 3 shows the duration of efficacy >90% against *R. microplus* and the onset of efficacy>90% against *R.microplus* for Composition G, H and Composition of Example 1.

Figure 4: Structures of the compounds 1-480.

DETAILED DESCRIPTION

Claims

1. Use of a Compound of Formula (I)



Formula (I)

and N-oxides, veterinary acceptable acid addition salts, solvates, crystal polymorphs, isotopes, stereoisomers, and tautomers thereof,

in the manufacture of a medicament for the treatment or control of a parasitic infestation of an animal, wherein

A_1 is CR_5, N=O, or N;

A_2 is CR_6, N=O, or N;

A_3 is CR_7, N=O, or N;

A_4 is CR_8, N=O or N;

A_5 is CR_9, N=O or N;

wherein no more than 3 of A_1, A_2, A_3, A_4, A_5 are N or N=O;

R^1 is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, $(C_1$-$C_6)$alkyl, $(C_3$-$C_6)$cycloalkyl, $(C_2$-$C_6)$alkenyl, $(C_3$-$C_6)$cycloalkenyl, $(C_2$-$C_6)$alkynyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$haloalkyl, $(C_3$-$C_6)$halocycloalkyl, $(C_2$-$C_6)$haloalkenyl, $(C_3$-$C_6)$halocycloalkenyl, $(C_1$-$C_6)$haloalkoxy, $S(C_1$-$C_6)$alkyl, $S(O)(C_1$-$C_6)$alkyl, $S(O)_2(C_1$-$C_6)$alkyl, $S(C_1$-$C_6)$haloalkyl, $S(O)(C_1$-$C_6)$haloalkyl, $S(O)_2(C_1$-$C_6)$haloalkyl, $(C_1$-$C_6)$alkyl-$S(O)_2NH_2$, and $(C_1$-$C_6)$haloalkyl-$S(O)_2NH_2$;

R^2 is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, $(C_1$-$C_6)$alkyl, $(C_3$-$C_6)$cycloalkyl, $(C_2$-$C_6)$alkenyl, $(C_3$-$C_6)$cycloalkenyl, $(C_2$-$C_6)$alkynyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$haloalkyl, $(C_3$-$C_6)$halocycloalkyl, $(C_2$-$C_6)$haloalkenyl, $(C_3$-$C_6)$halocycloalkenyl, $(C_1$-$C_6)$haloalkoxy, $S(C_1$-$C_6)$alkyl, $S(O)(C_1$-$C_6)$alkyl, $S(O)_2(C_1$-$C_6)$alkyl, $S(C_1$-$C_6)$haloalkyl, $S(O)(C_1$-$C_6)$haloalkyl, $S(O)_2(C_1$-$C_6)$haloalkyl, $(C_1$-$C_6)$alkyl-$S(O)_2NH_2$, and $(C_1$-$C_6)$haloalkyl-$S(O)_2NH_2$ and S-$(Halo)_5$;

R^3 is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, $(C_1$-$C_6)$alkyl, $(C_3$-$C_6)$cycloalkyl, $(C_2$-$C_6)$alkenyl, $(C_3$-$C_6)$cycloalkenyl, $(C_2$-$C_6)$alkynyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$haloalkyl, $(C_3$-$C_6)$halocycloalkyl, $(C_2$-$C_6)$haloalkenyl, $(C_3$-$C_6)$halocycloalkenyl, $(C_1$-$C_6)$haloalkoxy, $S(C_1$-$C_6)$alkyl, $S(O)(C_1$-$C_6)$alkyl, $S(O)_2(C_1$-

C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(C_1-C_6)haloalkyl, S(O)$_2$(C_1-C_6)haloalkyl, (C_1-C_6)alkyl-S(O)$_2$NH$_2$, and (C_1-C_6)haloalkyl-S(O)$_2$NH$_2$ and S-(Halo)$_5$;

R^4 is selected from the group consisting of H, F, Cl, Br, I, CN, NH$_2$, NO$_2$, (C_1-C_6)alkyl, (C_3-C_6)cycloalkyl, (C_2-C_6)alkenyl, (C_3-C_6)cycloalkenyl, (C_2-C_6)alkynyl, (C_1-C_6)alkoxy, (C_1-C_6)haloalkyl, (C_3-C_6)halocycloalkyl, (C_2-C_6)haloalkenyl, (C_3-C_6)halocycloalkenyl, (C_1-C_6)haloalkoxy, S(C_1-C_6)alkyl, S(O)(C_1-C_6)alkyl, S(O)$_2$(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(C_1-C_6)haloalkyl, S(O)$_2$(C_1-C_6)haloalkyl, (C_1-C_6)alkyl-S(O)$_2$NH$_2$, and (C_1-C_6)haloalkyl-S(O)$_2$NH$_2$ and S-(Halo)$_5$;

R^5 is selected from the group consisting of H, F, Cl, Br, I, H, CN, CHO, NHOH, NO, NO$_2$, OH, NH$_2$, =O, (C_1-C_6)alkoxy, (C_1-C_6)alkyl, (C_1-C_6)alkylphenyl, (C_1-C_6)alkyl-S(O)$_2$NH$_2$, (C_1-C_6)haloalkoxy, (C_1-C_6)haloalkyl, (C_1-C_6)haloalkyl-S(O)$_2$NH$_2$, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_2-C_6)haloalkenyl, (C_3-C_6)cycloalkenyl, (C_3-C_6)cycloalkyl, (C_3-C_6)halocycloalkenyl, (C_3-C_6)halocycloalkyl, (C_1-C_6)alkyl((C_1-C_6)alkyl)(=NO(C_1-C_6)alkyl), C(=NO(C_1-C_6)alkyl)(C_1-C_6)alkyl, C(=O)(C_1-C_6)alkyl, C(=O)NH(C_1-C_6)alkyl, C(=O)NHphenyl, C(=O)O(C_1-C_6)alkyl, CH(=NO(C_1-C_6)alkyl), imidazolyl, N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl-O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)haloalkyl), N((C_1-C_6)alkyl)(C(=O)O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)$_2$, N(C(=O)O(C_1-C_6)alkyl)$_2$, N=CH-phenyl, NH((C_1-C_6)alkylC(=O)(C_1-C_6)alkyl), NHC(=O)R^{10}, N(C_1-C_6)alkyl-C(=O)lR^{10}, NH(C_1-C_6)alkyl, NH(C_1-C_6)alkenyl, NH(C_1-C_6)alkynyl, NH(C_1-C_6)alkylphenyl, NH(S(O)$_2$(C_1-C_6)alkyl), NH-C(=O)O(C_1-C_6)alkyl, oxazolyl, phenyl, pyrazolyl, pyridinyl, S(=NCN)((C_1-C_6)alkyl), S(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(=NCN)((C_1-C_6)alkyl), S(O)(C_1-C_6)alkyl, S(O)(C_1-C_6)haloalkyl, S(O)$_2$(C_1-C_6)alkyl, S(O)$_2$(C_1-C_6)haloalkyl, SCN, thiazolyl, thienyl, and triazolyl,

wherein each alkoxy, alkyl, haloalkoxy, haloalkyl, alkenyl, alkynyl, haloalkenyl, cycloalkenyl, cycloalkyl, halocycloalkenyl, halocycloalkyl, imidazolyl, phenyl, pyrazolyl, pyridinyl, thiazolyl, thienyl, and triazolyl, may be optionally substituted with one or more substituents selected from the group consisting of F, Cl, Br, I, CN, OH, NH(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH$_2$O(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH$_2$O(C_1-C_6)haloalkyl, NHCH$_2$(C_3-C_6)cycloalkyl, NH$_2$, NO$_2$, oxo, (C_1-C_6)alkyl, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, and C(=O)O-(C_1-C_6)alkyl;

R^6 is selected from the group consisting of F, Cl, Br, I, H, CN, CHO, NHOH, NO, NO$_2$, OH, NH$_2$, =O, (C_1-C_6)alkoxy, (C_1-C_6)alkyl, (C_1-C_6)alkylphenyl, (C_1-C_6)alkyl-S(O)$_2$NH$_2$, (C_1-C_6)haloalkoxy, (C_1-C_6)haloalkyl, (C_1-C_6)haloalkyl-S(O)$_2$NH$_2$, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_2-C_6)haloalkenyl, (C_3-C_6)cycloalkenyl, (C_3-C_6)cycloalkyl, (C_3-C_6)halocycloalkenyl, (C_3-C_6)halocycloalkyl, (C_1-C_6)alkyl((C_1-C_6)alkyl)(=NO(C_1-C_6)alkyl), C(=NO(C_1-C_6)alkyl)(C_1-C_6)alkyl, C(=O)(C_1-C_6)alkyl, C(=O)NH(C_1-C_6)alkyl, C(=O)NHphenyl, C(=O)O(C_1-C_6)alkyl, CH(=NO(C_1-C_6)alkyl), imidazolyl, N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl-O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)haloalkyl), N((C_1-C_6)alkyl)(C(=O)O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)$_2$, N(C(=O)O(C_1-C_6)alkyl)$_2$, N=CH-phenyl, NH((C_1-C_6)alkylC(=O)(C_1-C_6)alkyl), NHC(=O)R^{10}, N(C_1-C_6)alkyl-C(=O)lR^{10}, NH(C_1-C_6)alkyl, NH(C_1-C_6)alkenyl, NH(C_1-C_6)alkynyl, NH(C_1-C_6)alkylphenyl, NH(S(O)$_2$(C_1-C_6)alkyl), NH-C(=O)O(C_1-C_6)alkyl, oxazolyl, phenyl, pyrazolyl, pyridinyl, S(=NCN)((C_1-C_6)alkyl), S(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(=NCN)((C_1-C_6)alkyl), S(O)(C_1-C_6)alkyl, S(O)(C_1-C_6)haloalkyl, S(O)$_2$(C_1-C_6)alkyl, S(O)$_2$(C_1-C_6)haloalkyl, SCN, thiazolyl, thienyl, and triazolyl,

wherein each alkoxy, alkyl, haloalkoxy, haloalkyl, alkenyl, alkynyl, haloalkenyl, cycloalkenyl, cycloalkyl, halocycloalkenyl, halocycloalkyl, imidazolyl, phenyl, pyrazolyl, pyridinyl, thiazolyl, thienyl, and triazolyl, may be optionally substituted with one or more substituents selected from the group consisting of F, Cl, Br, I, CN, OH, NH(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH$_2$O(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH$_2$O(C_1-C_6)haloalkyl, NHCH$_2$(C_3-C_6)cycloalkyl, NH$_2$, NO$_2$, oxo, (C_1-C_6)alkyl, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, and C(=O)O-(C_1-C_6)alkyl;

R^7 is selected from the group consisting of F, Cl, Br, I, H, CN, CHO, NHOH, NO, NO$_2$, OH, NH$_2$, =O, (C_1-C_6)alkoxy, (C_1-C_6)alkyl, (C_1-C_6)alkylphenyl, (C_1-C_6)alkyl-S(O)$_2$NH$_2$, (C_1-C_6)haloalkoxy, (C_1-C_6)haloalkyl, (C_1-C_6)haloalkyl-S(O)$_2$NH$_2$, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_2-C_6)haloalkenyl, (C_3-C_6)cycloalkenyl, (C_3-C_6)cycloalkyl, (C_3-C_6)halocycloalkenyl, (C_3-C_6)halocycloalkyl, (C_1-C_6)alkyl((C_1-C_6)alkyl)(=NO(C_1-C_6)alkyl), C(=NO(C_1-C_6)alkyl)(C_1-C_6)alkyl, C(=O)(C_1-C_6)alkyl, C(=O)NH(C_1-C_6)alkyl, C(=O)NHphenyl, C(=O)O(C_1-

C_6)alkyl, CH(=NO(C_1-C_6)alkyl), imidazolyl, N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl-O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)haloalkyl), N((C_1-C_6)alkyl)(C(=O)O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)$_2$, N(C(=O)O(C_1-C_6)alkyl)$_2$, N=CH-phenyl, NH((C_1-C_6)alkylC(=O)(C_1-C_6)alkyl), NHC(=O)R^{10}, N(C_1-C_6)alkyl-C(=O)lR^{10}, NH(C_1-C_6)alkyl, NH(C_1-C_6)alkenyl, NH(C_1-C_6)alkynyl, NH(C_1-C_6)alkylphenyl, NH(S(O)$_2$(C_1-C_6)alkyl), NH-C(=O)O(C_1-C_6)alkyl, oxazolyl, phenyl, pyrazolyl, pyridinyl, S(=NCN)((C_1-C_6)alkyl), S(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(=NCN)((C_1-C_6)alkyl), S(O)(C_1-C_6)alkyl, S(O)(C_1-C_6)haloalkyl, S(O)$_2$(C_1-C_6)alkyl, S(O)$_2$(C_1-C_6)haloalkyl, SCN, thiazolyl, thienyl, and triazolyl,

wherein each alkoxy, alkyl, haloalkoxy, haloalkyl, alkenyl, alkynyl, haloalkenyl, cycloalkenyl, cycloalkyl, halocycloalkenyl, halocycloalkyl, imidazolyl, phenyl, pyrazolyl, pyridinyl, thiazolyl, thienyl, and triazolyl, may be optionally substituted with one or more substituents selected from the group consisting of F, Cl, Br, I, CN, OH, NH(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH$_2$O(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH$_2$O(C_1-C_6)haloalkyl, NHCH$_2$(C_3-C_6)cycloalkyl, NH$_2$, NO$_2$, oxo, (C_1-C_6)alkyl, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, and C(=O)O-(C_1-C_6)alkyl;

R^8 is selected from the group consisting of F, Cl, Br, I, H, CN, CHO, NHOH, NO, NO$_2$, OH, NH$_2$, =O, (C_1-C_6)alkoxy, (C_1-C_6)alkyl, (C_1-C_6)alkylphenyl, (C_1-C_6)alkyl-S(O)$_2$NH$_2$, (C_1-C_6)haloalkoxy, (C_1-C_6)haloalkyl, (C_1-C_6)haloalkyl-S(O)$_2$NH$_2$, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_2-C_6)haloalkenyl, (C_3-C_6)cycloalkenyl, (C_3-C_6)cycloalkyl, (C_3-C_6)halocycloalkenyl, (C_3-C_6)halocycloalkyl, (C_1-C_6)alkyl((C_1-C_6)alkyl)(=NO(C_1-C_6)alkyl), C(=NO(C_1-C_6)alkyl)(C_1-C_6)alkyl, C(=O)(C_1-C_6)alkyl, C(=O)NH(C_1-C_6)alkyl, C(=O)NHphenyl, C(=O)O(C_1-C_6)alkyl, CH(=NO(C_1-C_6)alkyl), imidazolyl, N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl-O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)haloalkyl), N((C_1-C_6)alkyl)(C(=O)O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)$_2$, N(C(=O)O(C_1-C_6)alkyl)$_2$, N=CH-phenyl, NH((C_1-C_6)alkylC(=O)(C_1-C_6)alkyl), NHC(=O)R^{10}, N(C_1-C_6)alkyl-C(=O)lR^{10}, NH(C_1-C_6)alkyl, NH(C_1-C_6)alkenyl, NH(C_1-C_6)alkynyl, NH(C_1-C_6)alkylphenyl, NH(S(O)$_2$(C_1-C_6)alkyl), NH-C(=O)O(C_1-C_6)alkyl, oxazolyl, phenyl, pyrazolyl, pyridinyl, S(=NCN)((C_1-C_6)alkyl), S(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(=NCN)((C_1-C_6)alkyl), S(O)(C_1-C_6)alkyl, S(O)(C_1-C_6)haloalkyl, S(O)$_2$(C_1-C_6)alkyl, S(O)$_2$(C_1-C_6)haloalkyl, SCN, thiazolyl, thienyl, and triazolyl,

wherein each alkoxy, alkyl, haloalkoxy, haloalkyl, alkenyl, alkynyl, haloalkenyl, cycloalkenyl, cycloalkyl, halocycloalkenyl, halocycloalkyl, imidazolyl, phenyl, pyrazolyl, pyridinyl, thiazolyl, thienyl, and triazolyl, may be optionally substituted with one or more substituents selected from the group consisting of F, Cl, Br, I, CN, OH, NH(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH$_2$O(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH$_2$O(C_1-C_6)haloalkyl, NHCH$_2$(C_3-C_6)cycloalkyl, NH$_2$, NO$_2$, oxo, (C_1-C_6)alkyl, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, and C(=O)O-(C_1-C_6)alkyl;

R^9 is selected from the group consisting of F, Cl, Br, I, H, CN, CHO, NHOH, NO, NO$_2$, OH, NH$_2$, =O, (C_1-C_6)alkoxy, (C_1-C_6)alkyl, (C_1-C_6)alkylphenyl, (C_1-C_6)alkyl-S(O)$_2$NH$_2$, (C_1-C_6)haloalkoxy, (C_1-C_6)haloalkyl, (C_1-C_6)haloalkyl-S(O)$_2$NH$_2$, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_2-C_6)haloalkenyl, (C_3-C_6)cycloalkenyl, (C_3-C_6)cycloalkyl, (C_3-C_6)halocycloalkenyl, (C_3-C_6)halocycloalkyl, (C_1-C_6)alkyl((C_1-C_6)alkyl)(=NO(C_1-C_6)alkyl), C(=NO(C_1-C_6)alkyl)(C_1-C_6)alkyl, C(=O)(C_1-C_6)alkyl, C(=O)NH(C_1-C_6)alkyl, C(=O)NHphenyl, C(=O)O(C_1-C_6)alkyl, CH(=NO(C_1-C_6)alkyl), imidazolyl, N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)alkyl-O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)(C(=O)(C_1-C_6)haloalkyl), N((C_1-C_6)alkyl)(C(=O)O(C_1-C_6)alkyl), N((C_1-C_6)alkyl)$_2$, N(C(=O)O(C_1-C_6)alkyl)$_2$, N=CH-phenyl, NH((C_1-C_6)alkylC(=O)(C_1-C_6)alkyl), NHC(=O)R^{10}, N(C_1-C_6)alkyl-C(=O)lR^{10}, NH(C_1-C_6)alkyl, NH(C_1-C_6)alkenyl, NH(C_1-C_6)alkynyl, NH(C_1-C_6)alkylphenyl, NH(S(O)$_2$(C_1-C_6)alkyl), NH-C(=O)O(C_1-C_6)alkyl, oxazolyl, phenyl, pyrazolyl, pyridinyl, S(=NCN)((C_1-C_6)alkyl), S(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(=NCN)((C_1-C_6)alkyl), S(O)(C_1-C_6)alkyl, S(O)(C_1-C_6)haloalkyl, S(O)$_2$(C_1-C_6)alkyl, S(O)$_2$(C_1-C_6)haloalkyl, SCN, thiazolyl, thienyl, and triazolyl,

wherein each alkoxy, alkyl, haloalkoxy, haloalkyl, alkenyl, alkynyl, haloalkenyl, cycloalkenyl, cycloalkyl, halocycloalkenyl, halocycloalkyl, imidazolyl, phenyl, pyrazolyl, pyridinyl, thiazolyl, thienyl, and triazolyl, may be optionally substituted with one or more substituents selected from the group consisting of F, Cl, Br, I, CN, OH, NH(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH$_2$O(C_1-C_6)alkyl, NH(C_3-C_6)cycloalkylCH$_2$O(C_1-C_6)haloalkyl, NHCH$_2$(C_3-C_6)cycloalkyl, NH$_2$, NO$_2$, oxo, (C_1-C_6)alkyl, (C_1-C_6)alkyl, (C_1-C_6)alkoxy, and C(=O)O-(C_1-C_6)alkyl;

or **R⁶** and **R⁷** together with the atoms to which they are attached form a 5 or 6- atoms containing ring, wherein the ring-forming atoms are selected from the group consisting of -CH_2-, -CH=, =CH-,-N=, =N-, -NH-, -O-, -S(O)-, -$S(O)_2$- and -S-, wherein the ring formed by **R⁶** and **R⁷** is optionally substituted with one or more substituents of selected from the group consisting of (C_1-C_3)alkyl, F, Cl, Br, I, CN, NO_2, and =O;

or **R⁷** and **R⁸** together with the atoms to which they are attached form a 5 or 6- atoms containing ring, wherein the ring-forming atoms are selected from the group consisting of -CH_2-, -CH=, =CH-,-N=, =N-, -NH-, -O-, -S(O)-, -$S(O)_2$- and -S-, wherein the ring formed by **R⁷** and **R⁸** is optionally substituted with one or more substituents of selected from the group consisting of (C_1-C_3)alkyl, F, Cl, Br, I, CN, NO_2, and =O;

R¹⁰ is selected from the group consisting of H, (C_1-C_6)alkyl, (C_3-C_6)cycloalkyl), (C_1-C_6)alkyloxy-(C_1-C_6)-alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_1-C_6)haloalkyl, (C_1-C_6)alkyloxy-(C_1-C_6)haloalkyl, C_1-C_6)alkyloxy-(C_2-C_6)-alkenyl, (C_1-C_6)alkyl-(C_3-C_6)cycloalkyl, heterocycle, aryl and (C_1-C_6)alkylphenyl;

R¹¹ is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, (C_1-C_6)alkyl, (C_3-C_6)cycloalkyl, (C_2-C_6)alkenyl, (C_3-C_6)cycloalkenyl, (C_2-C_6)alkynyl, (C_1-C_6)alkoxy, (C_1-C_6)haloalkyl, (C_3-C_6)halocycloalkyl, (C_2-C_6)haloalkenyl, (C_3-C_6)halocycloalkenyl, (C_1-C_6)haloalkoxy, S(C_1-C_6)alkyl, S(O)(C_1-C_6)alkyl, $S(O)_2$(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(C_1-C_6)haloalkyl, $S(O)_2$(C_1-C_6)haloalkyl, (C_1-C_6)alkyl-$S(O)_2NH_2$, and (C_1-C_6)haloalkyl-$S(O)_2NH_2$;

R¹² is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, (C_1-C_6)alkyl, (C_3-C_6)cycloalkyl, (C_2-C_6)alkenyl, (C_3-C_6)cycloalkenyl, (C_2-C_6)alkynyl, (C_1-C_6)alkoxy, (C_1-C_6)haloalkyl, (C_3-C_6)halocycloalkyl, (C_2-C_6)haloalkenyl, (C_3-C_6)halocycloalkenyl, (C_1-C_6)haloalkoxy, S(C_1-C_6)alkyl, S(O)(C_1-C_6)alkyl, $S(O)_2$(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(C_1-C_6)haloalkyl, $S(O)_2$(C_1-C_6)haloalkyl, (C_1-C_6)alkyl-$S(O)_2NH_2$, and (C_1-C_6)haloalkyl-$S(O)_2NH_2$;

R¹³ is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, CHO, (C_1-C_6)alkyl, (C_3-C_6)cycloalkyl, (C_2-C_6)alkenyl, (C_3-C_6)cycloalkenyl, (C_2-C_6)alkynyl, (C_1-C_6)alkoxy, (C_1-C_6)haloalkyl, (C_3-C_6)halocycloalkyl, (C_2-C_6)haloalkenyl, (C_3-C_6)halocycloalkenyl, (C_1-C_6)haloalkoxy, S(C_1-C_6)alkyl, S(O)(C_1-C_6)alkyl, $S(O)_2$(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(C_1-C_6)haloalkyl, $S(O)_2$(C_1-C_6)haloalkyl, (C_1-C_6)alkyl-$S(O)_2NH_2$, (C_1-C_6)haloalkyl-$S(O)_2NH_2$, and triazolyl;

R¹⁴ is selected from the group consisting of H, F, Cl, Br, I, CN, NH_2, NO_2, (C_1-C_6)alkyl, (C_3-C_6)cycloalkyl, (C_2-C_6)alkenyl, (C_3-C_6)cycloalkenyl, (C_2-C_6)alkynyl, (C_1-C_6)alkoxy, (C_1-C_6)haloalkyl, (C_3-C_6)halocycloalkyl, (C_2-C_6)haloalkenyl, (C_3-C_6)halocycloalkenyl, (C_1-C_6)haloalkoxy, S(C_1-C_6)alkyl, S(O)(C_1-C_6)alkyl, $S(O)_2$(C_1-C_6)alkyl, S(C_1-C_6)haloalkyl, S(O)(C_1-C_6)haloalkyl, $S(O)_2$(C_1-C_6)haloalkyl, (C_1-C_6)alkyl-$S(O)_2NH_2$, and (C_1-C_6)haloalkyl-$S(O)_2NH_2$;

R¹⁵ is selected from the group consisting of H, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_1-C_6)haloalkyl**,** (C_1-C_6)alkoxy(C_1-C_6)alkyl, C(=O)(C_1-C_6)alkyl, and (C_1-C_6)alkoxyC(=O)(C_1-C_6)alkyl

H, (C_1-C_6)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_1-C_6)haloalkyl**;**

wherein at least one of R^5, R^6, R^7, R^8, R^9, is a substituent selected from the group consisting of F, Cl, Br, and I.

2. A use according to claim 1, wherein at least two of R^5, R^6, R^7, R^8, R^9, is a substituent selected from the group consisting of F, Cl, Br, and I, more preferably F or Cl.

3. A use according to claim 1 or 2, wherein 1 of A_1, A_2, A_3, A_4, A_5 is N, preferably A_1 or A_2 is N.

4. A use according to any of claims 1 to 3, wherein **R[12]** is selected from the group consisting H, F, CL, CH_3, CF_3.

5. A use according to any of claims 1 to 4, wherein **R[13]** is selected from the group consisting of H, F, Cl, CF_3 and CH_3.

6. A use according to any of claims 1 to 5, wherein **R[15]** is selected from the group consisting of H and CH_3.

7. A use according to any of claims 1 to 6, wherein at least one of the following selections is made:

R[1] is selected from the group consisting of H F, and Cl; and/or

R[2] is selected from the group consisting of H, F, and Cl; and/or

R[3] is selected from the group consisting of H, F, and Cl; and/

R[4] is selected from the group consisting of H, F, and Cl.

8. A use according to any of claims 1 to 7, wherein at least one of the following selections is made:

R[5] is selected from the group consisting of H F, Cl, Br, and I; and/or

R[6] is selected from the group consisting of H, F, and Cl, Br, and CH_3; and/or

R[7] is selected from the group consisting of H F, Cl, Br, and I; and/or

R[8] is selected from the group consisting of H, F, Cl, and Br, and CH_3; and/or

R[9] is selected from the group consisting of H F, Cl, Br, and I.

9. A use according to any of claims 1 to 8, wherein:

R[1] is selected from the group consisting of H F, and Cl;

R[2] is selected from the group consisting of H, F, and Cl;

R[3] is selected from the group consisting of H, F, and Cl;

R[4] is selected from the group consisting of H, F, and Cl;

R[5] is selected from the group consisting of H F, Cl, Br, and I;

R[6] is selected from the group consisting of H, F, and Cl, Br, and CH_3;

R[7] is selected from the group consisting of H F, Cl, Br, and I;

R[8] is selected from the group consisting of H, F, Cl, and Br, and CH_3;

R[9] is selected from the group consisting of H F, Cl, Br, and I;

R[11] is H;

R[12] is selected from the group consisting H, F, CL, CH_3, CF_3;

R[13] is selected from the group consisting of H, F, Cl, CF_3 and CH_3;

R[14] is H or F;

R[15] is selected from the group consisting of H and CH_3; and

wherein at least one of R^5, R^6, R^7, R^8, R^9, is a substituent selected from the group consisting of F, Cl, Br, and I.

10. A use according to any of claims 1 to 9, wherein:

R[1] is H;

R[2] is selected from the group consisting of H, F, and Cl;

R[3] is selected from the group consisting of H, Cl, F, and Br;

R[4] is H, F, Cl;

R[5] is selected from the group consisting of H F, and Cl;

R[6] is selected from the group consisting of H, F, and Cl, and CH_3;

R[7] is selected from the group consisting of H F, and Cl;

R[8] is selected from the group consisting of H, F, Cl, and CH_3;

R[9] is selected from the group consisting of H F, and Cl;

R[11] is H;

R[12] is selected from the group consisting H, F and Cl;

R[13] is selected from the group consisting of H, F, and Cl;

R[14] is H;

R[15] is selected from the group consisting of H and CH_3; and

wherein at least one of R^5, R^6, R^7, R^8, R^9, is a substituent selected from the group consisting of F, Cl, Br, and I.

11. A use according to any of claims 1 to 10, wherein the parasitic infestation is an ectoparasite infestation.

12. A use according to any of claims 1 to 11, wherein the parasitic infestation is an acaricide infestation.

13. A use according to any of claims 1 to 12, wherein the parasitic infestation is an infestation selected from tick, flea and/or fly, preferably a tick infestation.

14. A use according to any of claims 1 to 13, wherein the parasite is a one host tick or a multi-host tick, preferably the parasite is *Rhipicephalus microplus*.

15. A use according to any of claims 1 to 14, wherein the animal is a warm-blooded animal, especially a mammal.

16. A use according to any of claims 1 to 15, wherein the animal is a livestock animal, especially ruminant, especially a bovine animal, especially cattle.

17. A use according to any of claims 1 to 15, wherein the animal is a fish, and the parasitic infestation is a sea lice infestation.

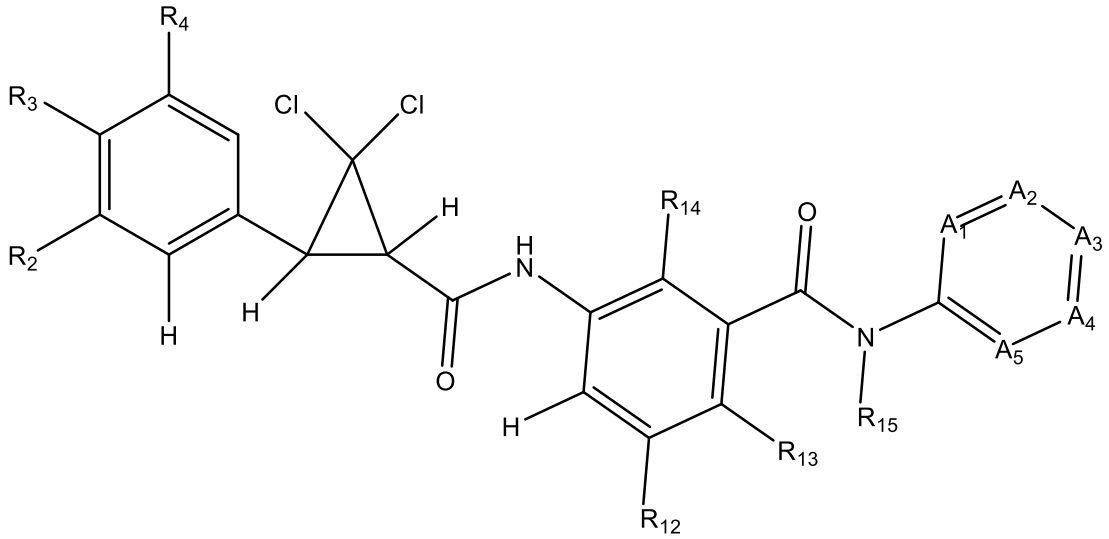
18. A use according to any of claims 1 to 15, wherein the animal is a companion animal, especially canine animal or a feline animal, especially a dog or cat.

19. A use according to any of claims 1 to 18, wherein the animal is to be protected from a parasite infestation.

20. A use according to any of claims 1 to 19, wherein an existing parasite infestation of the animal is to be treated or controlled.

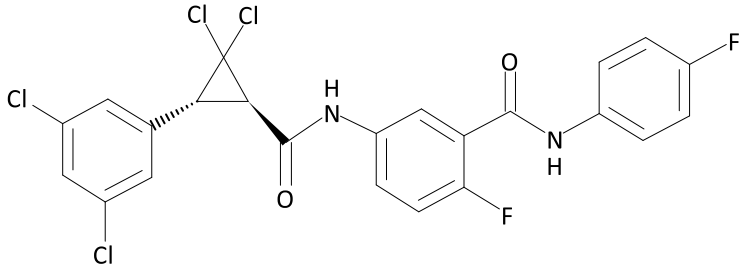
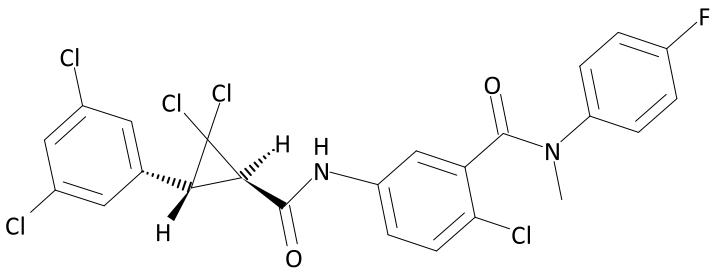
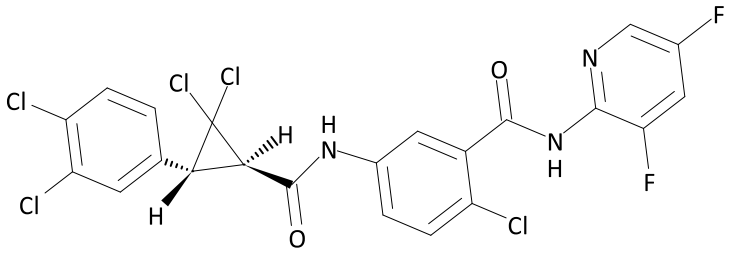
21. A use according to any of claims 1 to 20, wherein the compound is to be administered to the animal weekly, bi-weekly, monthly, every 6 weeks, every 2 months , every 3 months, 6 months or 9 months.

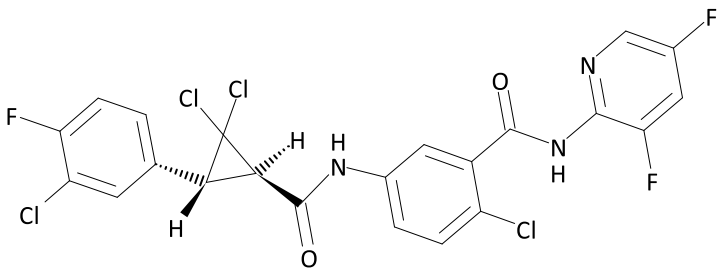
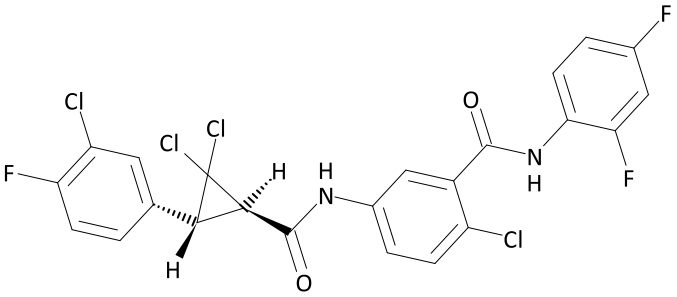
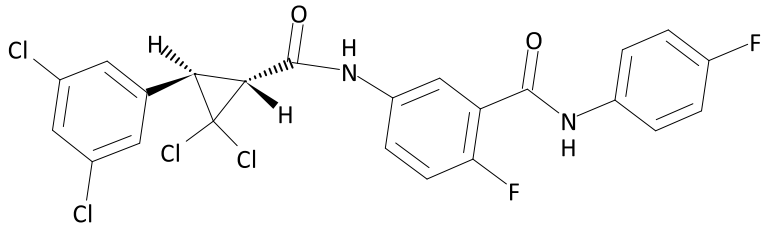
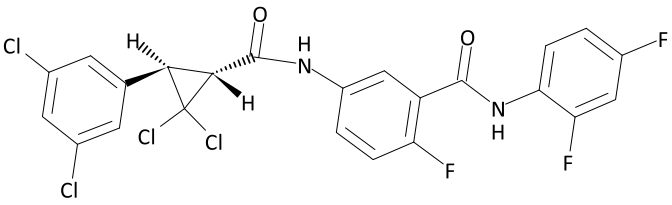
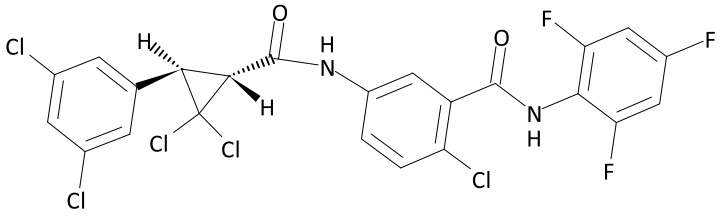
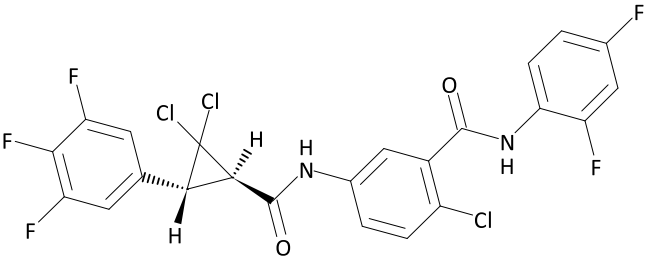
22. Use of a Compound of Formula (III)

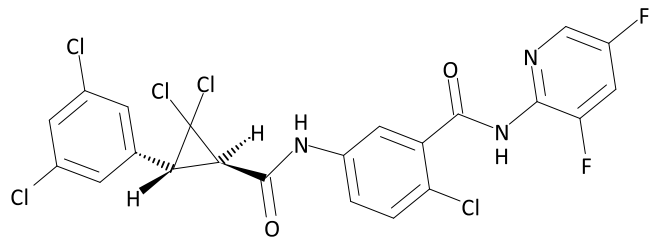
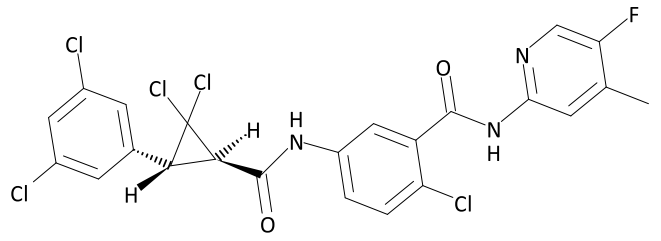
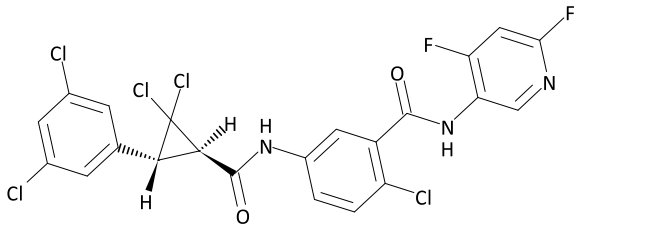
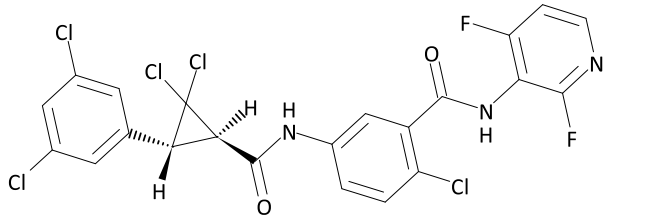
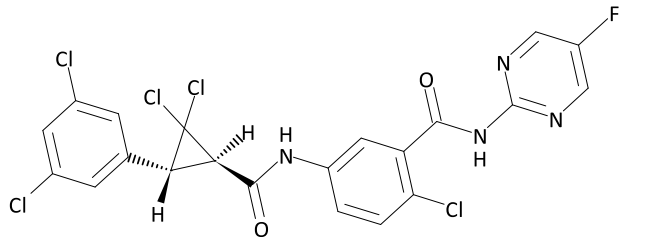
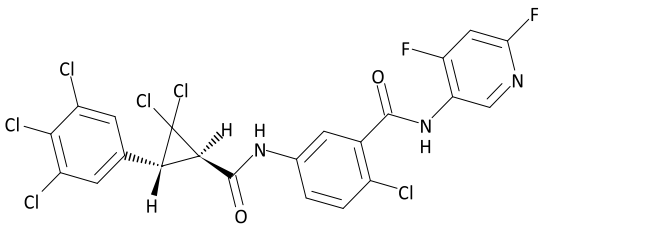


Formula (III)

and N-oxides, veterinary acceptable acid addition salts, solvates, crystal polymorphs, isotopes, stereoisomers, and tautomers thereof in the manufacture of a medicament for the treatment or control of a parasitic infestation of an animal as defined in any one of claims 1 to 21, wherein the compound is selected from the group consisting of

#	Compound
4	
51	
86	

89	
197	
446	
447	
449	
451	

453	
454	
455	
456	
460	
466	

23. A veterinary composition comprising an effective amount of a compound of Formula (I) as defined in any of claims 1-21 or a compound of Formula (III) as defined in claim 22 and an inert

carrier or formulation adjuvant, wherein the carrier is a pharmaceutically acceptable oily carrier comprising a fatty acid ester which is a glycol diester or a glycerol triester of a C_{8-10} fatty acid.

24. The veterinary composition according to claim 23, wherein the veterinary composition is a topical composition, an oral composition, or an injection composition.

25. The veterinary pharmaceutical composition according to claim 23 or 24, wherein the fatty acid ester is propylene glycol octanoate decanoate (e.g. Miglyol 840).

26. The veterinary pharmaceutical composition according to any one of claims 23 to 25, wherein the oily carrier comprises a combination of glycerol monocaprylate and propylene glycol dicaprylocaprate.

27. The veterinary pharmaceutical composition according to any one of claims 23 to 26, wherein the composition does not comprise a penetration enhancer.

28. The veterinary pharmaceutical composition according to any one of claims 23 to 27, comprising:

a) from 0.5% to 10% w/v, preferably 1% of the compound of Formula (I);

b1) from 90% to 99.9% w/v of preferably propylene glycol octanoate decanoate; or alternatively

b2) from 10% to 40% w/v, preferably 20% of glycerol monocaprylate; and

c) optionally, from 2% to 50% w/v, preferably 99% of propylene glycol dicaprylocaprate.