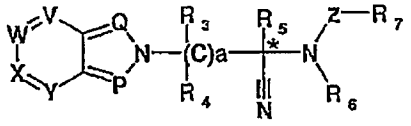
ENANTIOMERICALLY ENRICHED ARYLOAZOL-2-YL CYANOETHYLAMINO PARACITICIDAL COMPOUNDS

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of priority to U.S. Provisional Patent Application Nos. 61/114,665 and 61/114,656, both filed on November 14, 2008; and 61/176,136, filed on May 7, 2009, the disclosures of which are incorporated herein by reference in their entirety.

FIELD OF THE INVENTION

The present invention relates to novel paraciticidal aryloazol-2-yl-cyanoethylamino derivatives of formula (I) having a stereocenter present at the carbon bearing the cyano group and R_5 identified by an asterisk symbol:



(I)

wherein, R_3, R_4, R_5, R_6, R_7, P, Q, V, W, X, Y, Z, and a are as defined in the description, compositions thereof, processes for their preparation and their uses as pesticides.

BACKGROUND OF THE INVENTION

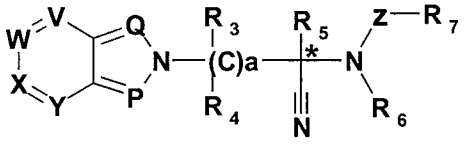
International Patent Publications WO 2002/049641, WO 2003/097036, WO 2003/097585, WO 2003/104187, WO 2004/000793, WO 2005/05802, WO 2005/121075, WO 2004/024704 (U.S. Patent 7,084,280), WO 2005/044784, WO 2005/121075 and WO 2006/043654 as well as EP 953565 (U.S. Patent 6,239,077) and EP 1445251 are generally concerned with the control of parasites, particularly endoparasites, by means of active agents which may have a cyanoethylamino group.

However none of the foregoing publications describe compounds of formula (I), or enantiomers thereof, that possess activity as pesticides, particularly for controlling endoparasites or ectoparasites in or on animals.

Citation or identification of any document in this application is not an admission that such document is available as prior art to the present invention.

Claims

1. An aryloazol-2-yl-cyanoethylamine compound of formula (I) that is enriched in an enantiomer which is the eutomer, or a salt thereof:



(I)

wherein:

P is N;

Q is C-R_2 or N;

V is N;

W is C-R_9;

X is C-R_{10};

Y is C-R_{11};

R_2 is hydrogen, Cl, Br, methoxy;

R_3, R_4 and R_6 are hydrogen;

R_5 is methyl;

R_7 is phenyl substituted by one or more of cyano, halogen, SF_5, OCF_3 or SCF_3;

R_8, R_9, R_{10} and R_{11} are, independently of one another, hydrogen, Cl, Br, I or methyl;

Z is a C(O);

a is 1; and

wherein the weight:weight ratio of the eutomer:distomer is at least 1.5 higher in favour of the eutomer.

2. The aryloazol-2-yl-cyanoethylamine of claim 1, wherein:

Q is C-R_2.

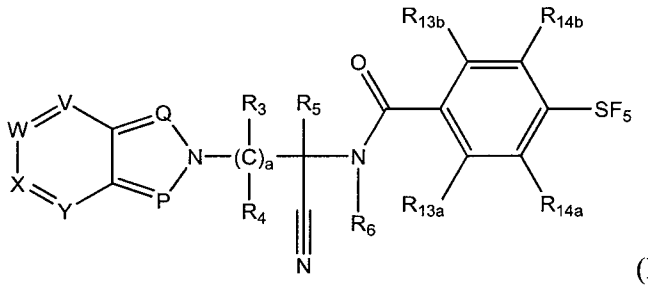
3. The arylozaol-2-yl-cyanoethylamine of claim 1, wherein the arylozaol-2-yl-cyanoethylamine is:

(+)-*N*-[1-Cyano-1-methyl-2-(4,5,7-trichloro-2*H*-benzotriazol-2-yl)-ethyl]-4-trifluoromethoxybenzamide, or (-)-*N*-[1-cyano-1-methyl-2-(4,5,7-trichloro-2*H*-benzotriazol-2-yl)-ethyl]-4-trifluoromethoxybenzamide .

4. The arylozaol-2-yl-cyanoethylamine of claim 1, wherein the arylozaol-2-yl-cyanoethylamine is:

(+)-*N*-[2-(6-Bromo-2*H*-pyrazolo[4,3-*b*]pyridin-2-yl)-1-cyano-1-methylethyl]-4-trifluoromethoxybenzamide, or (-)-*N*-[2-(6-bromo-2*H*-pyrazolo[4,3-*b*]pyridin-2-yl)-1-cyano-1-methylethyl]-4-trifluoromethoxybenzamide.

5. An aryloazol-2-yl-cyanoethylamino pentafluorothiobenzamide derivatives of formula (IH):



(IH)

Wherein:

P is N;

Q is C-R_2 or N;

V is C-R_8 or N;

W is C-R_9 or N;

X is C-R_{10} or N;

Y is C-R_{11} or N;

R_2 is hydrogen, halogen, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkoxy, halo-C_1-C_6-alkoxy or C_1-C_6-alkoxy-C_1-C_6-alkoxy;

R_8, R_9, R_{10} and R_{11} are independently of one another hydrogen, amino, amido, cyano, nitro, halogen, C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, hydroxyC_1-C_6-alkyl, haloC_1-C_6-alkyl, C_1-C_6-alkylthio, haloC_1-C_6-alkylthio, arylthio, C_1-C_6-alkoxy, phenoxy, C_1-C_6-alkoxyC_1-C_6-alkoxy, haloC_1-C_6-alkoxy, C_1-C_6-alkylcarbonyl, haloC_1-C_6-alkylcarbonyl, C_1-C_6-alkoxycarbonyl, haloC_1-C_6-alkoxycarbonyl, C_1-C_6-alkylsulfinyl, haloC_1-C_6-alkylsulfinyl, SF_5, C_1-C_6-alkylsulfonyl, haloC_1-C_6-alkylsulfonyl, C_1-C_6-alkylamino, di(C_1-C_6-alkyl)amino, C_1-C_6-alkylcarbonylamino, C_1-C_6-alkylaminoC_1-C_6-alkoxy, C_1-C_6-dialkylaminoC_1-C_6-alkoxy, C_1-C_6-alkylaminoC_1-C_6-alkyl, C_1-C_6-dialkylaminoC_1-C_6-alkyl, aminoC_1-C_6-alkyl, formyl, -C(O)OH, unsubstituted or substituted phenyl, wherein the substituents, independent of one another, may be one or more of halogen, C_1-C_6-alkyl,

haloC_1-C_6-alkyl, C_1-C_6-alkoxy or haloC_1-C_6-alkoxy, C_1-C_6-alkylcarbonyl, haloC_1-C_6-alkylcarbonyl, C_1-C_6-alkoxycarbonyl, haloC_1-C_6-alkoxycarbonyl, C_1-C_6-alkylsulfinyl;

R_3 and R_4 are hydrogen;

R_5 is hydrogen, C_1-C_3-alkyl or halo-C_1-C_3-alkyl;

R_6 is hydrogen or C_1-C_6-alkyl;

R_{13a}, R_{13b}, R_{14a} and R_{14b} are each independently of one another cyano, nitro, halogen, C_1-C_6alkyl, haloC_1-C_6-alkyl, C_1-C_6-alkylthio, haloC_1-C_6-alkylthio, C_1-C_6-alkoxy, haloC_1-C_6-alkoxy, C_1-C_6-alkylcarbonyl, haloC_1-C_6-alkylcarbonyl, C_1-C_6-alkoxycarbonyl, haloC_1-C_6-alkoxycarbonyl, C_1-C_6-alkylsulfinyl, haloC_1-C_6-alkylsulfinyl, C_1-C_6-alkylsulfonyl, haloC_1-C_6-alkylsulfonyl, SF_5, C_1-C_6-alkylamino, amino or di(C_1-C_6-alkyl)amino; and

a is 1.

6. The compound of claim 5, wherein:

P is N;

Q is N or C-R_2;

R_3, R_4, R_6 are hydrogen;

R_5 is methyl; and

a is 1.

7. The compound of formula (I) wherein the compound is (+)-*N*-[2-(6-Bromo-2*H*-pyrazolo[4,3-*b*]pyridin-2-yl)-1-cyano-1-methylethyl]-4-trifluoromethoxybenzamide.