5.9 FIPRONIL (202)

RESIDUE AND ANALYTICAL ASPECTS

Fipronil was first evaluated by the JMPR in 1997 for toxicology and in 2001 for residues. The 2000 JMPR re-evaluated fipronil for toxicology and established an ADI of 0–0.0002 mg/kg bw and an ARfD of 0.003 mg/kg bw for fipronil and fipronil-desulfinyl, alone or in combination**.**

Residue definitions for compliance with MRLs are fipronil for plant commodities and sum of fipronil and fipronil-sulfone for animal commodities. Residue definitions for estimation of dietary intake are sum of fipronil, fipronil-desulfinyl, fipronil-sulfone and fipronil-thioether for plant and animal commodities, expressed as fipronil.

At the 47th Session of the CCPR (2015), fipronil was scheduled for the evaluation of additional MRLs in 2016 JMPR. The Meeting received residue trials on basil from Thailand.

Methods of analysis

Residues in basil were extracted and cleaned-up using QuEChERS method. LC-MS/MS was used for determination of fipronil, fipronil-desulfinyl, fipronil-sulfone, fipronil-thioether and fipronil carboxamide. The LOQ was 0.01 mg/kg for each compound. Recoveries of each compound were satisfactory.

Another analytical method used involved extraction with acetone, partitioning with dichloromethane and a clean-up step. GC-μECD was used for determination of the compounds. The LOQ was 0.01 mg/kg for each compound. Recoveries of each compound were satisfactory.

Stability of pesticide residues in stored analytical samples

Stability of residues was not an issue as analyses was undertaken on the day of harvest.

Results of supervised residue trials on crops

Herbs

Basil

Five independent trials were conducted in Thailand according to the Thailand GAP (2 × 0.005 kg ai/hL with a 7-day interval and a 7-day PHI). In three trials, residues of fipronil-thioether were not measured.

From the trials where fipronil-thioether was analysed, the fipronil residues in basil were (n = 2): 0.093 and 0.24 mg/kg.

From the trials where fipronil-thioether was not analysed, the fipronil residues in basil were (n = 3): 0.023, 0.1 and 0.18 mg/kg.

The total residues (four compounds) in basil were (n = 2): 0.23 and 0.42 mg/kg.

The sum of residues of three compounds in basil were (n = 3): 0.080, 0.23 and 0.57 mg/kg.

Residues of fipronil-thioether did not contribute significantly to the total residue level (> 90% of total residues covered by sum of the three compounds). Therefore, the Meeting estimated STMR and HR values using all available data.

The total residues in basil were (n = 5): 0.080, 0.23, 0.23, 0.42 and 0.57 mg/kg.

The Meeting estimated a maximum residue level of 1.5 mg/kg, an STMR of 0.23 mg/kg and an HR of 0.57 mg/kg for basil.

Residues in animal commodities

No feed item was evaluated by this Meeting.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue level listed in Annex 1is appropriate for establishing a maximum residue limit and for IEDI and IESTI assessment.

Definition of the residue (for compliance with MRLs and for dietary risk assessment) for plant commodities: *fipronil.*

Definition of the residue (for compliance with MRLs and for dietary risk assessment) for animal commodities*: sum of fipronil and 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4- trifluoromethylsulphonylpyrazole (MB 46136), expressed as fipronil*.

The residue is fat soluble.

DIETARY RISK ASSESSMENT

Long-term dietary exposure

The 2000 JMPR established an ADI of 0–0.0002 mg/kg bw for fipronil. The International Estimated Daily Intakes (IEDIs) of fipronil were calculated for the 17 GEMS/Food cluster diets using STMRs and STMR-Ps estimated by the current and previous Meeting. The results are shown in Annex 3 in the 2016 JMPR Report.

The calculated IEDIs represented 20–90% of the maximum ADI. The Meeting concluded that the long-term exposure to residues of fipronil from the use considered by the JMPR is unlikely to present a public health concern.

Short-term dietary exposure

The 2000 JMPR established an ARfD of 0.003 mg/kg bw. The International Estimated Short Term Intakes (IESTIs) of fipronil were calculated for the food commodity using the HR estimated by the current Meeting. The results are shown in Annex 4 in the 2016 JMPR Report.

The IESTIs represented 10% of the ARfD for the general population and 20% of the ARfD for children. On the basis of the information provided to the Meeting it was concluded that the short-term dietary exposure to residues of fipronil, resulting from the uses considered by the Meeting, are unlikely to present a public health concern.