5.23 Pyriofenone (310)

RESIDUE AND ANALYTICAL ASPECTS

Pyriofenone was first evaluated for toxicology and residues by the JMPR in 2018. An acceptable daily intake (ADI) of 0–0.09 mg/kg bw was established. An acute reference dose (ARfD) was considered unnecessary. The residue definition for compliance with the MRL and dietary risk assessment for plant and animal commodities is: *Pyriofenone*. The 2018 Meeting considered that information was insufficient for determining fat solubility of pyriofenone in commodities of animal origin. The 2018 Meeting indicated that it may revisit the definition of the residue for animal commodities when information on the analytical method(s) for animal commodities becomes available.

Pyriofenone was scheduled at the Fiftieth Session of the CCPR (2018) for evaluation of additional uses by the 2019 JMPR. The Meeting received additional analytical methods on plant and animal matrices, storage stability studies, GAP information and supervised residue trials for uses on tomatoes and peppers and processing data for tomatoes.

Methods of analysis

The Meeting received additional validation data for lettuce, peppers, tomatoes and tomato processed commodities for LC-MS/MS method ISK0341, which was already evaluated by the 2018 JMPR.

Furthermore, the Meeting received an analytical method for the determination of pyriofenone in liver, kidney, muscle, fat, milk and eggs. The method employed extraction with acetonitrile:water:hydrochloric acid (50:50:1, v:v:v) and clean-up with solid phase extraction. The resulting extract was analysed by LC-MS/MS with an LOQ of 0.01 mg/kg.

The Meeting concluded that the presented methods were sufficiently validated and are suitable to measure pyriofenone in the matrices indicated.

Stability of pesticide residues in stored analytical samples

The Meeting received additional information on storage stability of pyriofenone in lettuce, tomato, tomato puree, tomato paste, tomato juice and tomato wet and dry pomace, demonstrating a storage stability of at least 18 months at -10 °C.

The Meeting agreed that the demonstrated storage stability on lettuce, tomatoes and tomato processed commodities covered the residue sample storage intervals used in the field trials and processing studies considered by the current Meeting.

Definition of the residue for animal commodities

The Meeting noted that a sufficiently validated analytical method was available for the analysis of parent pyriofenone in animal tissues, milk and eggs. The Meeting confirmed its conclusion from the 2018 Meeting that pyriofenone is a suitable marker for enforcement of MRLs and for dietary risk assessment for commodities of animal origin. Should the livestock dietary burden increase for ruminants or a dietary burden for poultry be required for pyriofenone, the Meeting may revisit the residue definition for dietary risk assessment.

Results of supervised residue trials on crops

The Meeting received additional supervised trials for the use of pyriofenone on tomatoes and peppers. Product labels were available from the USA.

Fruiting vegetables other than cucurbits

Pyriofenone is registered in the USA for use on fruiting vegetables. The critical GAP is a maximum of 0.35 kg ai/ha per year with a maximum of 0.11 kg ai/ha per application and a minimum re-treatment

interval of 7 days and a 0-day PHI. This leads to a critical GAP of 3 applications at 0.11 kg ai/ha, with a minimum re-treatment interval of 7 days and a PHI of 0 days.

Trials were conducted in the USA on tomatoes and peppers. None of these trials matched the critical GAP, since all trials were conducted at a lower dose rate of 0.090 kg ai/ha and a higher number of applications (4 applications). The Meeting was unable to estimate maximum residue levels for tomatoes and peppers.

Fate of residues during processing

The Meeting received new information on the fate of pyriofenone residues during the processing of tomatoes into juice, puree and paste. The preliminary results suggest that concentration of pyriofenone occurs in tomato wet and dry pomace, while no concentration occurs in tomato juice, tomato puree and tomato paste.

Residues in animal products

Feeding studies

No feeding studies were received by the 2018 or 2019 Meetings. The Meeting decided to use the lactating goat metabolism study evaluated by the 2018 Meeting.

In this metabolism study a lactating goat received a dose equivalent to 10 ppm in the diet (nominal; actual levels were 7.8–13 ppm) for five consecutive days. Total radioactive residues (TRR) in milk reached a plateau concentration of 0.004 mg eq/kg after the third day of dosing. The goat was slaughtered 23 hours after the last dose. Parent compound was found at 0.005–0.007 mg/kg in liver and 0.001–0.002 mg/kg in kidney. TRR in milk, muscle and fat were all at or below 0.004 mg eq/kg and were not further characterized.

Estimation of livestock dietary burdens

A maximum dietary burden of 0.61 ppm for beef and dairy cattle was estimated by the 2018 JMPR. As no maximum residue levels were estimated for plant commodities at the current Meeting, the dietary burden remains unchanged.

Animal commodities maximum residue levels

As a valid analytical method on animal commodities is available, the Meeting decided to estimate maximum residue levels for animal commodities.

Based on the goat metabolism study, parent pyriofenone is not expected above the LOQ of 0.01 mg/kg in mammalian tissues or milk at a maximum dietary burden of 0.61 ppm. The Meeting recommended maximum residue levels of 0.01(*) mg/kg and STMRs of 0 mg/kg in mammalian meat (muscle, fat), mammalian fat, mammalian edible offal and milk.

Since poultry is not exposed and residues of pyriofenone are not expected in eggs and poultry tissues, the Meeting recommended maximum residue levels of 0.01(*) mg/kg in eggs, poultry meat (muscle, fat), poultry fat and poultry edible offal with STMRs of 0 mg/kg in eggs, poultry meat (muscle, fat), poultry fat and poultry edible offal.

RECOMMENDATIONS

On the basis of the data from supervised trials, the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI assessment.

Definition of the residue for compliance with the MRL and dietary risk assessment for plant and animal commodities: *pyriofenone.*

DIETARY RISK ASSESSMENT

Long-term dietary exposure

The 2018 JMPR established an ADI for pyriofenone of 0–0.09 mg/kg bw and estimated International Estimated Daily Intakes (IEDIs) for pyriofenone ranging from 0-0.5% of the maximum ADI. As no maximum residue levels were recommended for plant commodities at the current Meeting and there is no contribution from animal commodities, the IEDIs remain unchanged. The Meeting concluded that the long-term dietary exposure to residues of pyriofenone from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The 2018 JMPR decided that an ARfD for pyriofenone was unnecessary. The Meeting therefore concluded that the acute dietary exposure to residues of pyriofenone from the uses considered is unlikely to present a public health concern.