UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

MEMORANDUM

Date: July 2, 2003

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DP Barcode: D281841 and D297173

Petition No.: 1F06313

Citation: 45643801 Stewart, J. (2002) A Meat and Egg Magnitude of the Residue Study with BAS 510 F in Laying Hens: Final Report: Lab Project Number: 2002/5002466. Unpublished study prepared by BASF Agro Research. 202 p.

Sponsor: BASF Corporation

Background

The information contained herein was compiled by Dynamac Corporation (20440 Century Boulevard, Suite 100, Germantown MD 20874), contractor, under the supervision of RAB2/HED. This DER has undergone secondary review by RAB2, and reflects current HED and Office of Pesticide Programs (OPP) policies. This DER was also peer-reviewed by PMRA.

Executive Summary

BASF Corporation has submitted a poultry feeding study with BAS 510 F. Laying hens were dosed orally via a balling gun once a day with encapsulated BAS 510 F for 29 consecutive days at target levels of 1.0 ppm, 5.0 ppm, and 20.0 ppm in the feed. These levels corresponded to actual dose levels of 1.02, 5.31, and 19.6 ppm in the diet, which were intended to represent 1x,

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5x, and 20x, respectively, of the maximum theoretical dietary burden (MTDB) of BAS 510 F to poultry. The petitioner calculated the MTDB to be 1.24 ppm, based on a diet consisting of alfalfa, canola, dried peas, sunflower, and peanuts, and maximum residue levels based on preliminary field trial results.

During the dosing period, eggs were collected twice each day and pooled. Most hens were sacrificed within 5 hours following the final dose administration; a few hens were also sacrificed at 3 and 10 days post-dosing to measure residue depletion (depuration).

Egg and hen tissue samples were analyzed for residues of BAS 510 F and its hydroxy metabolite M510F01 (including glucuronide conjugate M510P02) using an LC/MS/MS method (Method 471/0). The method limit of quantitation (LOQ) for residues of each analyte is 0.01 ppm in eggs and 0.025 ppm in tissues. Concurrent method validation data included in the current submission indicate that the LC/MS/MS method is adequate for data collection. Adequate method validation data have also been submitted for Method 471/0 (see the 860.1340 DER for MRID 45405106) on eggs.

In egg samples collected over the course of the dosing period, residues of BAS 510 F were <0.01 ppm for the 1x and 5x dose groups and <0.01-0.04 ppm for the 20x dose group; residues of M510F01 were below the LOQ (<0.01 ppm) for the 1x dose group, <0.01-0.01 ppm for the 5x dose group, and <0.01-0.04 ppm for the 20x dose group. Combined residues of BAS 510 F and M510F01 in eggs from hens dosed at the 20x level ranged <0.02-0.07 ppm.

In tissue samples from the 1x, 5x, and 20x dosing groups, respective residues of BAS 510 F were: (i) <0.025 ppm, <0.025 ppm, and <0.025 ppm in muscle; (ii) <0.025 ppm, 0.03-0.10 ppm, and 0.11-0.17 ppm in fat; and (iii) <0.025 ppm, <0.025 ppm, and <0.025 ppm in liver. Residues of M510F01 were below the LOQ (<0.025 ppm) in muscle samples from all three dosing groups and in fat samples from the 1x and 5x dose groups. Quantifiable residues of M510F01 were observed in fat samples from the 20x dose group at <0.025-0.05 ppm, and in liver samples from the 1, 5, and 20x dose groups at <0.025-0.03 ppm, 0.08-0.15 ppm, and 0.29-0.44 ppm, respectively. Combined residues of BAS 510 F and M510F01 were <0.05 ppm in muscle samples from all three dose groups and in fat samples from the 1x dose group. Combined residues of BAS 510 F and M510F01 were <0.05-0.12 ppm and <0.14-0.20 ppm in fat samples from the 5x and 20x dose groups, respectively, and <0.05-0.05 ppm, <0.11- <0.18 ppm, and <0.32-0.47 ppm in liver samples from the 1x, 5x, and 20x dose groups, respectively.

Residues of BAS 510 F and M510F01 were each below the LOQ (<0.01 ppm) in egg samples collected 7 and 10 days after dosing ceased and were each below the LOQ (<0.025 ppm) in samples of muscle, fat, and liver from hens sacrificed 3 and 10 days after dosing ceased. Quantifiable residues of BAS 510 F and M510F01 were observed in egg samples collected 3 days after dosing ceased; residues were <0.01-0.011 ppm and 0.016-0.021 ppm, respectively, in egg samples from the 20x dose group.

A summary of residue data from this hen feeding study is presented in Table 2.3.

Prior to residue analysis, samples of poultry commodities were stored frozen for 10-80 days (0.3-2.6 months) for eggs and 49-69 days (1.6-2.3 months) for tissues. The available concurrent storage stability data indicate that residues of BAS 510 F and M510F01 are stable for up to 44 days (1.4 months, the duration of the study) in eggs. The available storage stability data for ruminant tissues (see DER for MRID 45405108) may be translated to poultry tissues; these data indicate that residues of BAS 510 F and M510F01 are stable for up to 5.5 months in cow liver and muscle. No storage stability data for poultry fat were included in the current submission. However, according to OPPTS 860.1380(c)(5)(ii)(G), the representative animal commodities to be examined for storage stability data are muscle (cattle or poultry), liver (cattle or poultry), milk, and eggs. If residues are stable in these matrices, analysis of other tissues (fat, kidney) are not needed.

The submitted hen feeding study is deemed acceptable. Both Agencies will calculate the MTDB of BAS 510 F on poultry and will rely on the results of the current study to establish poultry commodity tolerances/MRL if needed.

GLP Compliance

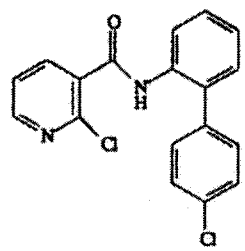
Signed and dated GLP, Quality Assurance, and Data Confidentiality statements were provided. No GLP deviations were reported which would impact the study results or their interpretation.

1. Materials and Methods

1.1. Test Substance

Active Ingredient

Common Name:	Nicobifen (ISO, proposed)
IUPAC Name:	2-Chloro-N-(4'-chlorobiphenyl-2-yl)nicotinamide
CAS Name:	3-Pyridinecarboxamide, 2-chloro-N-(4'chloro[1,1'-biphenyl]-2-yl)-
CAS Number:	188425-85-6
Company Name:	BAS 510 F
Other Synonyms:	BASF Registry Number 300355
Chemical Structure:	



1.2. Trial Animals and Dosing

Breed:	White leghorn laying hens
Diet and Water:	Krumbles (16.5% crude protein of which 12.05% was digestible protein, 1.4% crude fat, 4.5% acid detergent fiber and 9.4% ash) and water were provided *ad libitum*. Feed consumption was measured daily.
Acclimation period:	6 days prior to treatment
Pre-dosing:	None
Type of Dosing:	Oral, in gelatin capsules administered once daily
Dosing Vehicle:	BAS 510 F was dissolved in acetonitrile. The treatment solution was placed in a gelatin capsule together with loosely packed corn starch.
Groups/Dosage Rate:	3 dosing groups (1x, 5x, and 20x) and one control group
Number/Group:	The 1x and 5x dose groups were further divided into three subgroups of 4 hens/subgroup; the 20x dose group consisted of 5 subgroups of 4 hens/subgroup.
Dosage Rates:	Average dose rates (over the dosing group) based on average feed intake during the dosing period were: 1x: 1.02 ppm 5x: 5.31 ppm 20x: 19.6 ppm
Duration of Dosing:	Dosed for 29 consecutive days

1.3. Sample Collection Procedures

Eggs were collected twice daily in the morning and evening on Days -1, 1, 3, 5, 7, 10, 14, 17, 21, 24, and 28. The evening egg samples were stored under refrigeration and pooled by subgroup with the morning egg samples. The pooled egg collections were stored frozen (<-15 C) until shipment to BASF Agro Research (Research Triangle Park, NC).

Hens from the 1x, 5x, and 20x groups were sacrificed on day 29 of dosing. Hens from two subgroups from the 20x group were not sacrificed until 3 and 10 days following the last dose, to measure residue depletion; egg samples were also collected from these subgroups at 3, 7, and 10 days following the last dose. After sacrifice, which occurred approximately 5 hours following the final dose, a composite of muscle (thigh and breast), liver (entire), and a composite of fat (mesenteric and peripheral) were collected and pooled by subgroup. Tissue samples were homogenized and frozen (<-15 C) at Southwest Bio-Labs, Inc. (Las Cruces, NM) until shipment to BASF Agro Research (Research Triangle Park, NC) for analysis. The storage conditions at the analytical facility are detailed in Table 1.3.1. Samples were analyzed within 0-6 days of extraction.

Table 1.3.1. Summary of Storage Conditions			
Matrix	Commodity or Extract	Storage Temperature (°C)	Duration
Eggs	RAC	<-10	10-80 days (0.3-2.6 months)
Liver	RAC		49-59 days (1.6-1.9 months)
Muscle	RAC		54-64 days (1.8-2.1 months)
Fat	RAC		54-69 days (1.8-2.3 months)

A limited storage stability study was conducted concurrently with the hen feeding study for residues of BAS 510 F and its metabolite M510F01 in eggs. Samples of untreated eggs were fortified with BAS 510 F and M510F01 at 0.1 ppm each. Fortified and unfortified samples were stored at < -10 C. Control and fortified samples were analyzed for residues of BAS 510 F and M510F01 using LC/MS/MS method 471/0 following 0 and 44 days of frozen storage. Fresh fortification samples were also analyzed with the stored samples to generate concurrent method recoveries.

Table 1.3.2. Storage Stability of BAS 510 F and M510F01 in Eggs Fortified with Each Compound at 0.1 ppm and Stored Frozen (≤-10 C).					
Commodity	Analyte	Storage Period (days)	Concurrent Spike Recovery (%)[1]	Apparent Recovery in Stored Sample (%)	Corrected Recovery in Stored Sample (%)[2]
Egg	BAS 510 F	0	63, 68 (66)	--	--
		44	79, 90 (85)	70, 85	82, 100
	M510F01	0	101, 103 (102)	--	--
		44	92, 94 (93)	94, 102	101, 110

[1] Average fresh fortification recoveries are presented in parentheses.
[2] Corrected % recoveries were calculated by Dynamac.

1.4. Analytical Methods

Samples of hen matrices were analyzed for residues of BAS 510 F and its metabolite M510F01 (including the glucuronide conjugate M510F02) using LC/MS/MS method 471/0. Residues were extracted with methanol, subjected to enzyme hydrolysis with β-glucuronidase and arylsulfatase (to convert M510F02 to M510F01), and liquid/liquid partitioning with ethyl acetate. The organic phase was cleaned-up by silica gel solid phase extraction prior to LC/MS/MS analysis; refer to the 860.1340 DER for MRID 45405106 for a full description of the method. Residues of M510F01 were calculated as parent equivalents. The estimated limits of detection (LOD) for residues of BAS 510 F and M510F01 were each 0.002 ppm in eggs and 0.004 ppm in tissues. The validated limits of quantitation (LOQ) for residues of BAS 510 F and M510F01 were each <0.01 ppm for eggs and <0.025 ppm for tissues. Concurrent recovery data is presented in Table 2.1 below.

2. Results

Table 2.1. Summary of Concurrent Analytical Method Validation.			
Commodity Matrix	Fortification Level (ppm)	Recoveries (%)	Mean Recovery ± SD
Method 471/0 - BAS 510 F			
Eggs	0.01	64, 65, 69, 71, 77	76 ± 11
	0.02	66, 75, 76, 82, 206 [1]	
	0.025	60	
	0.05	80, 83, 94	
	0.10	63, 71, 89, 98	
Liver	0.025	66	66
	0.500	65	
Muscle	0.025	66, 66	66
Fat	0.025	64, 83	74
Method 471/0 - M510F01			
Eggs	0.01	72, 72, 75, 96, 97	91 ± 149
	0.02	71, 80, 95, 96, 104	
	0.025	75	
	0.05	98, 101, 117	
	0.10	91, 97, 100, 109	
Liver	0.025	98	86
	0.500	74	
Muscle	0.025	79, 94	87
Fat	0.025	95, 96	96

[1] The petitioner indicated that the BAS 510 F recovery was considered an outlier and was not included in the calculation of average recoveries.

Table 2.2. Residue Data from Poultry Feeding Study with BAS 510 F.					
Matrix/ Collection Time	Feeding Level (ppm)	Pre-Slaughter Interval (days)	Residues (ppm)		
			BAS 510 F[1]	M510F01[1]	Total BAS 510 F +M510F01
Egg/Day -1	1.02	Not applicable (N/A)	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 1	1.02	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02

Table 2.2. Residue Data from Poultry Feeding Study with BAS 510 F.

Matrix/ Collection Time	Feeding Level (ppm)	Pre-Slaughter Interval (days)	Residues (ppm)		
			BAS 510 F[1]	M510F01[1]	Total BAS 510 F +M510F01
Egg/Day 3	1.02	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 5	1.02	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 7	1.02	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 10	1.02	N/A	<0.01	<0.01	<0.02
			<0.01[2]	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 14	1.02	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 17	1.02	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 21	1.02	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 24	1.02	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 28	1.02	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day -1	5.31	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 1	5.31	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 3	5.31	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 5	5.31	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02

Table 2.2. Residue Data from Poultry Feeding Study with BAS 510 F.

Matrix/ Collection Time	Feeding Level (ppm)	Pre-Slaughter Interval (days)	Residues (ppm)		
			BAS 510 F[1]	M510F01[1]	Total BAS 510 F +M510F01
Egg/Day 7	5.31	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 10	5.31	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 14	5.31	N/A	<0.01	0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 17	5.31	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 21	5.31	N/A	<0.01	0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 24	5.31	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 28	5.31	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day -1	19.6	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 1	19.6	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			0.037	<0.01	<0.047
			<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
Egg/Day 3	19.6	N/A	<0.01	<0.01	<0.02
			<0.01	<0.01	<0.02
			0.012	0.012	0.024
Egg/Day 5	19.6	N/A	0.016	0.016	0.032
			<0.01	0.012	<0.022
			<0.01	0.017	<0.027
			0.010	0.015	0.025
			0.010	0.017	0.027

Table 2.2. Residue Data from Poultry Feeding Study with BAS 510 F.

Matrix/ Collection Time	Feeding Level (ppm)	Pre-Slaughter Interval (days)	Residues (ppm)		
			BAS 510 F[1]	M510F01[1]	Total BAS 510 F +M510F01
Egg/Day 7	19.6	N/A	0.033	0.029	0.062
			0.011	0.020	0.031
			0.024	0.024	0.048
			0.020	0.016	0.036
			0.037	0.014	0.051
Egg/Day 10	19.6	N/A	0.025	0.031	0.056
			0.014	0.024	0.038
			0.028	0.035	0.063
			0.011 [3]	0.016 [3]	0.027
			0.016 [3]	0.022 [3]	0.038
Egg/Day 14	19.6	N/A	0.023	0.030	0.053
			0.024	0.035	0.059
			0.012	0.021	0.033
			0.025	0.031	0.056
Egg/Day 17	19.6	N/A	0.018	0.027	0.045
			0.015	0.014	0.029
			0.022	0.027	0.049
			0.019	0.025	0.044
			0.018	0.030	0.048
Egg/Day 21	19.6	N/A	0.025	0.027	0.052
			0.017	0.026	0.043
			0.027	0.030	0.057
			0.033	0.032	0.065
			0.021	0.032	0.053
Egg/Day 24	19.6	N/A	0.013	0.026	0.039
			<0.01	0.022	<0.032
			<0.01	0.021	<0.031
			0.018	0.032	0.050
			<0.01	0.027	<0.037
Egg/Day 28	19.6	N/A	0.026	0.036	0.062
			0.027	0.034	0.061
			0.025	0.032	0.057
			0.011	0.017	0.028
			0.021	0.039	0.060
Egg/Day 31	19.6	N/A	0.011	0.016	0.027
			<0.01	0.021	<0.031
Egg/Day 35	19.6	N/A	<0.01	<0.01	<0.02
Egg/Day 38	19.6	N/A	<0.01	<0.01	<0.02
Muscle/Sacrifice	1.02	0	<0.025	<0.025	<0.05
			<0.025	<0.025	<0.05

Table 2.2. Residue Data from Poultry Feeding Study with BAS 510 F.

Matrix/ Collection Time	Feeding Level (ppm)	Pre-Slaughter Interval (days)	Residues (ppm)		
			BAS 510 F[1]	M510F01[1]	Total BAS 510 F +M510F01
			<0.025	<0.025	<0.05
Muscle/Sacrifice	5.31	0	<0.025	<0.025	<0.05
			<0.025	<0.025	<0.05
			<0.025	<0.025	<0.05
Muscle/Sacrifice	19.6	0	<0.025	<0.025	<0.05
			<0.025	<0.025	<0.05
			<0.025	<0.025	<0.05
Muscle/Sacrifice	19.6	3	<0.025	<0.025	<0.05
Muscle/Sacrifice	19.6	10	<0.025	<0.025	<0.05
Fat/Sacrifice	1.02	0	<0.025	<0.025	<0.05
			<0.025	<0.025	<0.05
			<0.025	<0.025	<0.05
Fat/Sacrifice	5.31	0	0.099	<0.025	<0.124
			0.027	<0.025	<0.052
			0.041	<0.025	<0.066
Fat/Sacrifice	19.6	0	0.133	0.053	0.186
			0.11	<0.025	<0.135
			0.171	<0.025	<0.196
Fat/Sacrifice	19.6	3	<0.025	<0.025	<0.05
Fat/Sacrifice	19.6	10	<0.025	<0.025	<0.05
Liver/Sacrifice	1.02	0	<0.025	0.026	<0.051
			<0.025	<0.025	<0.05
			<0.025	<0.025	<0.05
Liver/Sacrifice	5.31	0	<0.025	0.081	<0.106
			<0.025	0.101	<0.126
			<0.025	0.150	<0.175
Liver/Sacrifice	19.6	0	<0.025	0.441	<0.466
			<0.025	0.291	<0.316
			<0.025	0.404	<0.429
Liver/Sacrifice	19.6	3	<0.025	<0.025	<0.05
Liver/Sacrifice	19.6	10	<0.025	<0.025	<0.05

[1] Residues of BAS 510 F and M510F01were determined using method 471/0; residues of M510F01were reported as parent equivalents.

[2] The result represents triplicate analyses of the same sample. The petitioner indicated that the maximum BAS 510 F residue (0.021 ppm) was considered anomalous based on the results of the reextraction and duplicate analyses of the same sample.

[3] The result represents duplicate or triplicate analyses of the same sample; maximum residues are reported.

Table 2.3. Summary of Residue Data from Poultry Feeding Study with BAS 510 F.

Matrix	Feeding Level (ppm)	Pre-Slaughter Interval (days)	Analyte	Residue Levels (ppm)			
				Maximum	Highest Average	Mean	Std. Dev.
Egg	1.02	Not applicable (N/A)	BAS 510 F	<0.01	N/A	<0.01	0
			M510F01	<0.01	N/A	<0.01	0
Egg	5.31	N/A	BAS 510 F	<0.01	N/A	<0.01	0
			M510F01	0.01	N/A	<0.01	0
Egg	19.6	N/A	BAS 510 F	0.037	0.025 (Days 7 & 21)	0.017	0.008
			M510F01	0.039	0.032 (Day 28)	0.021	0.008
			Total [1]	0.065	0.054 (Days 21& 28)	0.038	0.015
Muscle	1.02	0	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	<0.025	N/A	<0.025	0
Muscle	5.31	0	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	<0.025	N/A	<0.025	0
Muscle	19.6	0	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	<0.025	N/A	<0.025	0
Muscle	19.6	3	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	<0.025	N/A	<0.025	0
Muscle	19.6	10	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	<0.025	N/A	<0.025	0
Fat	1.02	0	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	<0.025	N/A	<0.025	0
Fat	5.31	0	BAS 510 F	0.099	0.056	0.056	0.038
			M510F01	<0.025	N/A	<0.025	0
Fat	19.6	0	BAS 510 F	0.171	0.138	0.138	0.031
			M510F01	0.053	0.034	0.034	0.016
			Total [1]	0.196	0.172	0.172	0.033
Fat	19.6	3	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	<0.025	N/A	<0.025	0
Fat	19.6	10	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	<0.025	N/A	<0.025	0
Liver	1.02	0	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	0.026	<0.025	<0.025	0.001
Liver	5.31	0	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	0.150	0.111	0.111	0.036

Table 2.3. Summary of Residue Data from Poultry Feeding Study with BAS 510 F.

Matrix	Feeding Level (ppm)	Pre-Slaughter Interval (days)	Analyte	Residue Levels (ppm)			
				Maximum	Highest Average	Mean	Std. Dev.
Liver	19.6	0	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	0.441	0.379	0.379	0.078
Liver	19.6	3	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	<0.025	N/A	<0.025	0
Liver	19.6	10	BAS 510 F	<0.025	N/A	<0.025	0
			M510F01	<0.025	N/A	<0.025	0

[1] Total BAS 510 F and M510F01; only included in this table when quantifiable residues were observed for both analytes.

Apparent residues of BAS 510 F and M510F01 were each below the LOQ (<0.01 ppm for eggs and <0.025 ppm for muscle, fat, and liver) in 16 samples of eggs, and 2 samples each of muscle, fat, and liver from undosed hens.

3. Discussion

3.1. Methods

Laying hens were dosed with BAS 510 F for 29 days at feeding levels equivalent to 1.02, 5.31, and 19.6 ppm in the diet; hens from two of the 19.6 ppm dosing subgroups were not sacrificed until 3 and 10 days after dosing ceased to demonstrate residue depletion. The petitioner indicated that the feeding levels were intended to represent 1x, 5x, and 20x the maximum theoretical dietary burden of BAS 510 F to poultry, which was calculated to be 1.24 ppm based on a theoretical diet consisting of alfalfa, canola, dried peas, sunflower, and peanuts. The petitioner noted that maximum residue levels used for determination of dietary burden were based on preliminary field trial results.

Samples of eggs, muscle, fat, and liver were analyzed for residues of BAS 510 F and M510F01 (including glucuronide conjugate M510F02) using an LC/MS/MS method (Method 471/0). Concurrent method validation data included in the current submission indicate that the LC/MS/MS method is adequate for data collection purposes in poultry eggs and tissues. In addition, adequate method validation data have been submitted for Method 471/0 (see the 860.1340 DER for MRID 45405106) on eggs.

Samples of poultry commodities were stored frozen for 10-80 days (0.3-2.6 months) for eggs and 49-69 days (1.6-2.3 months) for poultry tissues prior to analysis for residues of BAS 510 F and M510F01. Concurrent storage stability data indicate that residues of BAS 510 F and M510F01 are stable for up to 44 days (1.4 months, duration of study) in eggs. In addition, adequate storage stability data for ruminants (see the 860.1380 DER for MRID 45405108) are available to support the storage intervals and conditions of muscle and liver samples from this study, and demonstrate

that residues of BAS 510 F and M510F01 are stable for up to 5.5 months in cow liver and muscle.

No data are available depicting the stability of BAS 510 F and M510F01 residues in poultry fat. However, according to OPPTS 860.1380(c)(5)(ii)(G) the representative animal commodities to be examined for storage stability data include muscle (cattle or poultry), liver (cattle or poultry), milk, and eggs. If residues are stable in these matrices, analysis of other tissues (fat, kidney) are not needed.

3.2. Results

Following dosing of laying hens with BAS 510 F for 29 days at 1.02 (1x), 5.31(5x), and 19.6 ppm (20x), residues of BAS 510 F in egg samples collected over the course of the dosing period. were <0.01 ppm for the 1x and 5x dose groups and <0.01-0.04 ppm for the 20x dose group; residues of M510F01 were below the LOQ (<0.01 ppm) for the 1x dose group, <0.01-0.01 ppm for the 5x dose group, and <0.01-0.04 ppm for the 20x dose group. Combined residues of BAS 510 F and M510F01 in eggs from hens dosed at the 20x level ranged <0.02-0.07 ppm.

In tissue samples from the 1x, 5x, and 20x dosing groups, respective residues of BAS 510 F were: (i) <0.025 ppm, <0.025 ppm, and <0.025 ppm in muscle samples; (ii) <0.025 ppm, 0.03-0.10 ppm, and 0.11-0.17 ppm in fat samples; and (iii) <0.025 ppm, <0.025 ppm, and <0.025 ppm in liver samples. Residues of M510F01 were below the LOQ (<0.025 ppm) in muscle samples from all three dosing groups and in fat samples from the 1x and 5x dose groups. Quantifiable residues of M510F01 were observed in fat samples from the 20x dose group at <0.025-0.05 ppm, and in liver samples from the 1, 5, and 20x dose groups at <0.025-0.03 ppm, 0.08-0.15 ppm, and 0.29-0.44 ppm, respectively. Combined residues of BAS 510 F and M510F01 were <0.05 ppm in muscle samples from all three dose groups and in fat samples from the 1x dose group. Combined residues of BAS 510 F and M510F01 were <0.05-0.12 ppm and <0.14-0.20 ppm in fat samples from the 5x and 20x dose groups, respectively, and <0.05-0.051 ppm, <0.11- <0.18 ppm, and <0.32-0.47 ppm in liver samples from the 1x, 5x, and 20x dose groups, respectively.

Residues of BAS 510 F and M510F01 were each below the LOQ (<0.01 ppm) in egg samples collected 7 and 10 days after dosing ceased and were each below the LOQ (<0.025 ppm) in samples of muscle, fat, and liver from hens sacrificed 3 and 10 days after dosing ceased. Quantifiable residues of BAS 510 F and M510F01 were observed in egg samples collected 3 days after dosing ceased; residues were <0.01-0.011 ppm and 0.016-0.021 ppm, respectively, in egg samples from the 20x dose group.

4. Deficiencies

None.

5. References

None.