

TABLE B4
Summary of the Incidence of Nonneoplastic Lesions in Female Rats in the 2-Year Feed Study of Fumonisin B₁^a

	0 ppm	5 ppm	15 ppm	50 ppm	100 ppm
Disposition Summary					
6-Week evaluation	4	4	4	4	4
10-Week evaluation	4	4	4	4	4
14-Week evaluation	4	4	4	4	4
26-Week evaluation	4	4	4	4	4
Animals initially in 2-year study	48	40	48	48	48
Early deaths					
Removed from study	1	2		2	
Moribund	20	15	23	16	16
Natural deaths	2	1	1		3
Survivors					
Terminal sacrifice	25	22	24	30	29
Animals examined microscopically	64	56	64	64	64
6-Week Evaluation					
Kidney	(4)	(4)	(4)	(4)	(4)
Mineralization	4 (100%)	4 (100%)	4 (100%)	4 (100%)	4 (100%)
Liver	(4)	(4)	(4)	(4)	(4)
Hyperplasia, bile duct	2 (50%)				
Inflammation, chronic		1 (25%)		2 (50%)	1 (25%)
Vacuoliz cyto, focal	1 (25%)				
10-Week Evaluation					
Kidney	(4)	(4)	(4)	(4)	(4)
Mineralization	4 (100%)	4 (100%)	4 (100%)	4 (100%)	4 (100%)
Liver	(4)	(4)	(4)	(4)	(4)
Develop malfor	1 (25%)	1 (25%)			
Hyperplasia, bile duct		3 (75%)		1 (25%)	1 (25%)
Inflammation, chronic		1 (25%)		1 (25%)	
Vacuoliz cyto, focal				1 (25%)	
Mesentery	(1)			(1)	
Necrosis, focal, fat	1 (100%)			1 (100%)	
Ovary					(1)
Cyst					1 (100%)
14-Week Evaluation					
Intestine large				(1)	
Hemorrhage, focal, cecum, submucosa				1 (100%)	
Kidney	(4)	(4)	(4)	(4)	(4)
Mineralization	4 (100%)	4 (100%)	4 (100%)	4 (100%)	4 (100%)
Liver	(4)	(4)	(4)	(4)	(4)
Hyperplasia, bile duct			1 (25%)	1 (25%)	
Inflammation, chronic	1 (25%)	2 (50%)	3 (75%)	2 (50%)	2 (50%)
Vacuoliz cyto, focal					1 (25%)
Ovary	(1)				(1)
Cyst	1 (100%)				1 (100%)
Uterus	(1)	(1)	(1)	(1)	
Dilatation	1 (100%)	1 (100%)	1 (100%)	1 (100%)	
Inflammation, chronic		1 (100%)			

^a Number of animals examined microscopically at the site and the number of animals with lesion

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26-Week Evaluation					
Kidney	(4)	(4)	(4)	(4)	(4)
Mineralization	4 (100%)	4 (100%)	4 (100%)	4 (100%)	4 (100%)
Nephropathy					1 (25%)
Liver	(4)	(4)	(4)	(4)	(4)
Develop malfor			1 (25%)		1 (25%)
Hyperplasia, bile duct	1 (25%)	3 (75%)	4 (100%)	3 (75%)	1 (25%)
Infiltrate cell, mixed cell, focal, serosa			2 (50%)		
Inflammation, chronic	2 (50%)	2 (50%)	2 (50%)	4 (100%)	3 (75%)
Vacuoliz cyto, focal					1 (25%)
Uterus		(1)			(1)
Dilatation		1 (100%)			1 (100%)
Inflammation, chronic					1 (100%)
Tissues Examined with No Lesions Observed					
Ovary					
2-Year Study					
Adrenal gland	(48)	(20)	(24)	(19)	(47)
Angiectasis, bilateral, cortex	16 (33%)	1 (5%)	2 (8%)	2 (11%)	16 (34%)
Angiectasis, cortex	1 (2%)			1 (5%)	1 (2%)
Cyst, cortex				1 (5%)	
Hema cell prol					1 (2%)
Hyperplasia, focal, cortex	2 (4%)			2 (11%)	4 (9%)
Hyperplasia, focal, medulla	2 (4%)		1 (4%)	1 (5%)	4 (9%)
Hypertrophy, focal, cortex					1 (2%)
Infiltrat cell, lymphocytic					1 (2%)
Infiltrat cell, lymphocytic, bilateral					1 (2%)
Inflammation, chronic, cortex		1 (5%)			
Necrosis, cortex	1 (2%)				
Pigment, bilateral, cortex	1 (2%)		1 (4%)		
Vacuoliz cyto, diffuse, bilateral, cortex		2 (10%)			
Vacuoliz cyto, diffuse, cortex		1 (5%)			
Vacuoliz cyto, focal, bilateral, cortex	3 (6%)			1 (5%)	1 (2%)
Vacuoliz cyto, focal, cortex	2 (4%)	4 (20%)	3 (13%)	1 (5%)	6 (13%)
Bone	(48)	(18)	(24)	(18)	(48)
Cyst, mandible			1 (4%)		
Hyperostosis, turbinate	6 (13%)	1 (6%)	2 (8%)		5 (10%)
Inflammation, chronic, joint					1 (2%)
Bone, femur	(48)	(18)	(24)	(18)	(48)
Hyperostosis	19 (40%)	7 (39%)	9 (38%)	5 (28%)	22 (46%)
Bone, sternum	(47)	(18)	(23)	(18)	(48)
Hyperostosis	19 (40%)	7 (39%)	8 (35%)	5 (28%)	22 (46%)
Bone marrow	(46)	(18)	(23)	(18)	(48)
Depletion	1 (2%)	1 (6%)	1 (4%)	1 (6%)	1 (2%)
Hyperplasia	11 (24%)	6 (33%)	4 (17%)	3 (17%)	8 (17%)
Myelofibrosis	1 (2%)	2 (11%)			1 (2%)
Brain	(48)	(18)	(24)	(18)	(48)
Compression, hypothalamus	9 (19%)	4 (22%)	8 (33%)	3 (17%)	8 (17%)
Hydrocephalus	1 (2%)			1 (6%)	

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2-Year Study (continued)					
Clitoral gland	(41)	(19)	(25)	(22)	(40)
Cyst		1 (5%)		2 (9%)	2 (5%)
Hyperplasia, focal	1 (2%)	1 (5%)	1 (4%)	1 (5%)	3 (8%)
Inflammation, acute					1 (3%)
Inflammation, acute, bilateral					1 (3%)
Inflammation, chronic	4 (10%)	1 (5%)			6 (15%)
Inflammation, chronic active	1 (2%)		2 (8%)	1 (5%)	
Inflammation, chronic active, bilateral	1 (2%)				
Eye	(48)	(21)	(32)	(25)	(48)
Atrophy, bilateral, retina	22 (46%)	7 (33%)	20 (63%)	18 (72%)	27 (56%)
Atrophy, retina	5 (10%)	5 (24%)	2 (6%)	1 (4%)	9 (19%)
Cataract, bilateral, lens	13 (27%)	5 (24%)	10 (31%)	8 (32%)	18 (38%)
Cataract, lens	3 (6%)	1 (5%)	1 (3%)	1 (4%)	1 (2%)
Inflammation, chronic, bilateral, cornea					1 (2%)
Inflammation, chronic, cornea	1 (2%)			1 (4%)	
Harderian gland	(48)	(18)	(24)	(18)	(48)
Atrophy, focal			1 (4%)	1 (6%)	
Hyperplasia, focal					1 (2%)
Infiltrat cell, lymphocytic	19 (40%)	5 (28%)	8 (33%)	6 (33%)	15 (31%)
Infiltrat cell, lymphocytic, bilateral	9 (19%)	7 (39%)	6 (25%)	4 (22%)	17 (35%)
Inflammation, chronic	2 (4%)	1 (6%)			
Inflammation, chronic, bilateral	3 (6%)	2 (11%)	3 (13%)	2 (11%)	4 (8%)
Heart	(48)	(18)	(24)	(18)	(48)
Cardiomyopathy	38 (79%)	8 (44%)	11 (46%)	8 (44%)	35 (73%)
Cardiomyopathy, multifocal					1 (2%)
Inflammation, chronic, valve	1 (2%)				
Mineralization		1 (6%)			
Thrombus, atrium		1 (6%)			
Intestine small, ileum	(44)	(18)	(24)	(18)	(46)
Inflammation, chronic	1 (2%)				
Kidney	(48)	(40)	(48)	(48)	(48)
Acc hyaline d, bilateral, renal tubule	1 (2%)	1 (3%)	1 (2%)	1 (2%)	1 (2%)
Cyst		3 (8%)			1 (2%)
Hydronephrosis, bilateral		1 (3%)			
Hyperplasia, focal, bilateral, renal tubule					1 (2%)
Hyperplasia, focal, pelvis, transit epithe	1 (2%)				
Hyperplasia, focal, renal tubule		1 (3%)	1 (2%)	2 (4%)	2 (4%)
Hyperplasia, pelvis, transit epithe	1 (2%)		1 (2%)		
Infarct	1 (2%)				
Infarct, chronic				1 (2%)	
Infiltrat cell, lymphocytic				1 (2%)	
Inflammation, acute, pelvis				1 (2%)	
Inflammation, chronic, artery	1 (2%)		1 (2%)		
Inflammation, chronic, bilateral, artery				1 (2%)	
Inflammation, chronic, pelvis				1 (2%)	
Mineralization		2 (5%)	1 (2%)	2 (4%)	3 (6%)
Mineralization, bilateral	48 (100%)	37 (93%)	46 (96%)	42 (88%)	42 (88%)
Necrosis, bilateral, renal tubule		1 (3%)			
Nephropathy		2 (5%)	1 (2%)		
Nephropathy, bilateral	41 (85%)	20 (50%)	34 (71%)	23 (48%)	35 (73%)
Pigment, bilateral, renal tubule	6 (13%)	16 (40%)	6 (13%)	4 (8%)	1 (2%)
Pigment, renal tubule		1 (3%)	1 (2%)		2 (4%)
Lacrimal gland	(47)	(22)	(26)	(19)	(48)
Atrophy, focal	1 (2%)		1 (4%)		1 (2%)
Cytoplasm alter	1 (2%)	1 (5%)			
Infiltrat cell, lymphocytic	26 (55%)	14 (64%)	10 (38%)	12 (63%)	23 (48%)
Proliferation, focal, duct	1 (2%)				

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2-Year Study (continued)					
Larynx	(46)	(17)	(24)	(17)	(47)
Foreign body		1 (6%)			
Hyperplasia, epithelium	1 (2%)				
Inflammation, acute	1 (2%)		1 (4%)		
Inflammation, chronic	5 (11%)	3 (18%)	1 (4%)	3 (18%)	
Inflammation, chronic active	3 (7%)				1 (2%)
Liver	(48)	(40)	(48)	(48)	(48)
Angiectasis, focal	1 (2%)	1 (3%)	2 (4%)		1 (2%)
Basoph focus	35 (73%)	26 (65%)	31 (65%)	37 (77%)	40 (83%)
Basoph focus, multiple			1 (2%)	1 (2%)	
Clear cl focus	4 (8%)	5 (13%)	6 (13%)	6 (13%)	5 (10%)
Eosin focus	7 (15%)	3 (8%)	11 (23%)	11 (23%)	4 (8%)
Hdn	5 (10%)	6 (15%)	6 (13%)	3 (6%)	8 (17%)
Hema cell prol	3 (6%)	3 (8%)	1 (2%)	1 (2%)	
Hyperplasia, bile duct	20 (42%)	20 (50%)	23 (48%)	21 (44%)	21 (44%)
Hyperplasia, nodular, focal, hepatocyte				1 (2%)	
Inflammation, chronic	17 (35%)	17 (43%)	18 (38%)	28 (58%)	26 (54%)
Mixed cl focus	19 (40%)	12 (30%)	11 (23%)	17 (35%)	16 (33%)
Necrosis		1 (3%)	1 (2%)		2 (4%)
Pigment	1 (2%)				
Tension lipoid	13 (27%)	8 (20%)	18 (38%)	16 (33%)	15 (31%)
Vacuoliz cyto, hepatocyte	7 (15%)	7 (18%)	7 (15%)	6 (13%)	12 (25%)
Lung	(47)	(40)	(48)	(48)	(48)
Congestion		1 (3%)			
Foreign body	1 (2%)				
Hyperplasia, focal, alveolar epith		2 (5%)	1 (2%)	2 (4%)	2 (4%)
Infiltrat cell, histiocytic	2 (4%)	2 (5%)	4 (8%)	2 (4%)	2 (4%)
Inflammation, chronic active, interstitium	1 (2%)				
Inflammation, chronic, interstitium	1 (2%)	3 (8%)	2 (4%)	1 (2%)	1 (2%)
Inflammation, granulomatous	1 (2%)				
Metapl, osseous	1 (2%)		1 (2%)	1 (2%)	
Lymph node	(48)	(20)	(25)	(18)	(48)
Hyperplasia, lymphoid, deep cervical				1 (6%)	
Lymph node, mandibular	(48)	(17)	(24)	(17)	(48)
Atrophy		1 (6%)			
Degen, cystic	2 (4%)	1 (6%)	2 (8%)	2 (12%)	2 (4%)
Hemorrhage	1 (2%)		1 (4%)		
Hyperplasia, lymphoid	7 (15%)	1 (6%)	5 (21%)	3 (18%)	4 (8%)
Lymph node, mesenteric	(48)	(19)	(25)	(18)	(48)
Atrophy		1 (5%)			
Degen, cystic	1 (2%)	2 (11%)		1 (6%)	
Hemorrhage	3 (6%)	1 (5%)		2 (11%)	2 (4%)
Hyperplasia, lymphoid		1 (5%)	1 (4%)		1 (2%)
Infiltrat cell, histiocytic	37 (77%)	11 (58%)	16 (64%)	12 (67%)	32 (67%)
Mammary gland	(47)	(28)	(33)	(30)	(48)
Cyst	12 (26%)	4 (14%)	6 (18%)	4 (13%)	12 (25%)
Galactocele	10 (21%)	4 (14%)	4 (12%)	5 (17%)	11 (23%)
Hyperplasia, epithelium				1 (3%)	2 (4%)
Hyperplasia, focal, epithelium	2 (4%)	1 (4%)			
Mesentery	(2)	(5)	(5)	(3)	(2)
Necrosis, fat	1 (50%)	4 (80%)	4 (80%)	3 (100%)	2 (100%)

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2-Year Study (continued)					
Nose	(47)	(18)	(24)	(18)	(48)
Cytoplas alter, olfactory epi	24 (51%)	7 (39%)	13 (54%)	4 (22%)	19 (40%)
Foreign body	1 (2%)				1 (2%)
Inflammation, acute				1 (6%)	
Inflammation, acute, nasolacrim dct	2 (4%)	1 (6%)			2 (4%)
Inflammation, chronic				1 (6%)	1 (2%)
Inflammation, chronic active	3 (6%)		1 (4%)		1 (2%)
Inflammation, chronic active, nasolacrim dct	8 (17%)	4 (22%)	5 (21%)	5 (28%)	11 (23%)
Inflammation, chronic, nasolacrim dct	4 (9%)	2 (11%)	5 (21%)	1 (6%)	5 (10%)
Metapl, olfactory epi		1 (6%)			
Ovary	(47)	(19)	(25)	(22)	(47)
Cyst, bilateral, periovarn tiss					1 (2%)
Cyst, follicle	1 (2%)	1 (5%)	2 (8%)	1 (5%)	2 (4%)
Cyst, periovarn tiss	1 (2%)	2 (11%)		2 (9%)	1 (2%)
Hyperplasia, rete ovarii		1 (5%)	2 (8%)		
Inflammation, chronic, bilateral				1 (5%)	
Oviduct				(1)	
Cyst				1 (100%)	
Pancreas	(48)	(18)	(24)	(18)	(48)
Atrophy, diffuse, acinar cell	1 (2%)			1 (6%)	1 (2%)
Atrophy, focal, acinar cell	15 (31%)	5 (28%)	6 (25%)	5 (28%)	24 (50%)
Hyperplasia, focal			1 (4%)		
Hyperplasia, focal, acinar cell	2 (4%)	1 (6%)			
Infiltrat cell, lymphocytic	1 (2%)	1 (6%)	1 (4%)	1 (6%)	
Inflammation, chronic	1 (2%)				
Inflammation, chronic, artery					1 (2%)
Pituitary gland	(47)	(30)	(35)	(34)	(48)
Angiectasis, pars distalis	2 (4%)	1 (3%)			
Atypical cells, pars nervosa				1 (3%)	
Cyst, pars distalis	6 (13%)	7 (23%)	3 (9%)	4 (12%)	5 (10%)
Hyperplasia, focal, pars distalis		2 (7%)			4 (8%)
Hypertrophy, focal, pars distalis	1 (2%)				1 (2%)
Inflammation, chronic, pars distalis				1 (3%)	
Salivary glands	(48)	(18)	(25)	(18)	(48)
Atrophy		1 (6%)			
Atrophy, parotid gland	3 (6%)		3 (12%)	2 (11%)	2 (4%)
Atrophy, submandibul gland	1 (2%)				
Cytoplas alter, focal	1 (2%)				
Cytoplas alter, focal, parotid gland					1 (2%)
Hyperplasia, focal, parotid gland		1 (6%)			
Mineralization, parotid gland	1 (2%)				
Skeletal muscle, thigh	(48)	(18)	(24)	(18)	(48)
Atrophy	1 (2%)				
Degen			2 (8%)		
Inflammation, chronic					1 (2%)
Mineralization		1 (6%)			
Skin	(48)	(18)	(27)	(21)	(48)
Cyst epith inc			2 (7%)	1 (5%)	
Hyperplasia, epidermis			1 (4%)		1 (2%)
Inflammation, chronic		1 (6%)	2 (7%)	1 (5%)	
Inflammation, chronic active	1 (2%)	1 (6%)			
Ulcer		1 (6%)			

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2-Year Study (continued)					
Spleen	(48)	(25)	(30)	(21)	(48)
Atrophy, lymph follic		1 (4%)			1 (2%)
Cyst, capsule				1 (5%)	
Hema cell prol	11 (23%)	5 (20%)	7 (23%)	4 (19%)	7 (15%)
Hyperplasia, focal, lymph follic		1 (4%)			
Inflammation, chronic					1 (2%)
Pigment	16 (33%)	4 (16%)	5 (17%)	4 (19%)	19 (40%)
Stomach, forestomach	(48)	(17)	(24)	(18)	(48)
Edema			1 (4%)		
Erosion, focal		1 (6%)	1 (4%)	1 (6%)	
Hyperplasia, epithelium	4 (8%)	3 (18%)	2 (8%)	4 (22%)	3 (6%)
Inflammation, chronic	2 (4%)	3 (18%)	2 (8%)	3 (17%)	
Ulcer	1 (2%)				
Stomach, glandular	(48)	(18)	(24)	(18)	(48)
Cyst	9 (19%)	7 (39%)	7 (29%)	1 (6%)	6 (13%)
Erosion, focal		2 (11%)	1 (4%)		
Fibrosis					1 (2%)
Inflammation, chronic, serosa	1 (2%)				
Thymus	(41)	(15)	(22)	(18)	(40)
Atrophy	10 (24%)	2 (13%)		1 (6%)	2 (5%)
Cyst	2 (5%)		1 (5%)	3 (17%)	2 (5%)
Ect parathyr					1 (3%)
Hemorrhage		1 (7%)	1 (5%)		
Hyperplasia, lymphoid			3 (14%)		
Thyroid gland	(48)	(18)	(25)	(19)	(48)
Cyst, follicle	1 (2%)				
Hyperplasia, diffuse, c cell	1 (2%)		1 (4%)		
Hyperplasia, focal, c cell	6 (13%)	5 (28%)	5 (20%)	1 (5%)	11 (23%)
Hyperplasia, follicle	1 (2%)				1 (2%)
Tongue	(48)	(18)	(24)	(20)	(48)
Infiltrat cell, mast cell					1 (2%)
Inflammation, chronic, artery	1 (2%)				
Mineralization		1 (6%)			
Trachea	(48)	(18)	(24)	(18)	(48)
Hyperplasia, epithelium	1 (2%)	1 (6%)			
Inflammation, chronic	4 (8%)			1 (6%)	
Inflammation, chronic active	1 (2%)				
Urinary bladder	(45)	(17)	(24)	(18)	(47)
Infiltrat cell, lymphocytic	1 (2%)	1 (6%)			3 (6%)
Uterus	(47)	(23)	(30)	(23)	(48)
Atrophy		1 (4%)			
Cyst, endometrium	4 (9%)	1 (4%)	1 (3%)	2 (9%)	2 (4%)
Fibrosis				1 (4%)	
Hemorrhage	2 (4%)				
Hemorrhage, endometrium					1 (2%)
Hydrometra	3 (6%)	4 (17%)	1 (3%)	3 (13%)	3 (6%)
Hydrometra, bilateral				1 (4%)	
Hyperplasia, cervix, epithelium		1 (4%)			
Hypertrophy, cervix				1 (4%)	1 (2%)
Inflammation, chronic active, endometrium		1 (4%)		1 (4%)	
Inflammation, chronic, endometrium	1 (2%)				
Necrosis, endometrium			1 (3%)		
Prolapse	1 (2%)	1 (4%)			1 (2%)

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2-Year Study (continued)					
Vagina	(47)	(17)	(25)	(18)	(47)
Fibrosis, focal					1 (2%)
Hyperplasia, epithelium					1 (2%)
Inflammation, acute			1 (4%)		1 (2%)
Inflammation, chronic active				1 (6%)	
Inflammation, chronic, muscularis			1 (4%)		

