

APPENDIX 1

**SUMMARY TABLES OF
GENETIC AND RELATED EFFECTS**

Summary table of genetic and related effects of *d*-limonene and related compounds

d-Limonene

Nonmammalian systems													Mammalian systems																															
Proka-ryotes			Lower eukaryotes				Plants			Insects			In vitro						In vivo																									
D	G		D	R	G	A	D	G	C	R	G	C	A	Animal cells						Human cells						Animals			Humans															
														D	G	S	M	C	A	T	I	D	G	S	M	C	A	T	I	D	G	S	M	C	DL	A	D	S	M	C	A			
-														- ¹	- ¹			- ¹		- ¹																								

d-Limonene-1,2-oxide

Nonmammalian systems													Mammalian systems																															
Proka-ryotes			Lower eukaryotes				Plants			Insects			In vitro						In vivo																									
D	G		D	R	G	A	D	G	C	R	G	C	A	Animal cells						Human cells						Animals			Humans															
														D	G	S	M	C	A	T	I	D	G	S	M	C	A	T	I	D	G	S	M	C	DL	A	D	S	M	C	A			
														- ¹																														

Essential oils containing *d*-limonene

Nonmammalian systems													Mammalian systems																															
Proka-ryotes			Lower eukaryotes				Plants			Insects			In vitro						In vivo																									
D	G		D	R	G	A	D	G	C	R	G	C	A	Animal cells						Human cells						Animals			Humans															
														D	G	S	M	C	A	T	I	D	G	S	M	C	A	T	I	D	G	S	M	C	DL	A	D	S	M	C	A			
- ¹																																												

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the tables, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- considered to be negative

-¹ considered to be negative, but only one valid study was available to the Working Group

Summary table of genetic and related effects of 2-amino-3,8-dimethylimidazo[4,5-f]quinoxaline (MeIQx)

Nonmammalian systems													Mammalian systems																											
Proka-ryotes		Lower eukaryotes				Plants			Insects				In vitro							In vivo																				
													Animal cells				Human cells			Animals				Humans																
D	G	D	R	G	A	D	G	C	R	G	C	A	D	G	S	M	C	A	T	I	D	G	S	M	C	A	T	I	D	G	S	M	C	DL	A	D	S	M	C	A
+	+												+	+	+		- ¹									+	- ¹	+ ^{1a}	- ¹	+										

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the tables, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific endpoint and level of biological complexity
- +¹ considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- ¹ considered to be negative, but only one valid study was available to the Working Group

^aPositive in rat liver; negative in mouse bone marrow

Summary table of genetic and related effects of 2-amino-1-methyl-6-phenylimidazo[4,5-*b*]pyridine (PhIP)

Nonmammalian systems														Mammalian systems																												
Proka-ryotes		Lower eukaryotes				Plants				Insects				In vitro							In vivo																					
														Animal cells							Human cells							Animals							Humans							
D	G	D	R	G	A	D	G	C	R	G	C	A	D	G	S	M	C	A	T	I	D	G	S	M	C	A	T	I	D	G	S	M	C	DL	A	D	S	M	C	A		
+ ¹	+												+	+ ¹	+					+ ¹									+		? ¹	?	?									

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

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+ considered to be positive for the specific endpoint and level of biological complexity

+¹ considered to be positive, but only one valid study was available to the Working Group

? considered to be equivocal or inconclusive (e.g., there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

Summary table of genetic and related effects of toxins derived from *Fusarium moniliforme*

Fumonisin B₁

Nonmammalian systems														Mammalian systems																												
Proka-ryotes		Lower eukaryotes				Plants				Insects				In vitro							In vivo																					
														Animal cells							Human cells							Animals				Humans										
D	G	D	R	G	A	D	G	C	R	G	C	A	D	G	S	M	C	A	T	I	D	G	S	M	C	A	T	I	D	G	S	M	C	DL	A	D	S	M	C	A		
-													-1								-1																					

Fumonisin B₂

Nonmammalian systems														Mammalian systems																												
Proka-ryotes		Lower eukaryotes				Plants				Insects				In vitro							In vivo																					
														Animal cells							Human cells							Animals				Humans										
D	G	D	R	G	A	D	G	C	R	G	C	A	D	G	S	M	C	A	T	I	D	G	S	M	C	A	T	I	D	G	S	M	C	DL	A	D	S	M	C	A		
-													-1								-1																					

Summary table of genetic and related effects of toxins derived from *Fusarium moniliforme* (contd)

Fusarin C

Nonmammalian systems													Mammalian systems																															
Proka-ryotes		Lower eukaryotes				Plants			Insects				In vitro							In vivo																								
D	G	D	R	G	A	D	G	C	R	G	C	A	Animal cells					Human cells					Animals			Humans																		
D	G	D	R	G	A	D	G	C	R	G	C	A	D	G	S	M	C	A	T	I	D	G	S	M	C	A	T	I	D	G	S	M	C	DL	A	D	S	M	C	A				
?	+																																											
														+	+	+	+	+																										

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

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- ? considered to be equivocal or inconclusive (e.g., there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

Summary table of genetic and related effects of ochratoxin A

Nonmammalian systems														Mammalian systems																																																														
Proka-ryotes		Lower eukaryotes				Plants				Insects				In vitro							In vivo																																																							
														Animal cells							Human cells							Animals							Humans																																									
D	G	D	R	G	A	D	G	C	R	G	C	A	D	G	S	M	C	A	T	I	D	G	S	M	C	A	T	I	D	G	S	M	C	DL	A	D	S	M	C	A																																				
?	?																																																																											

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

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