Starch, modified

Toxicological Data on the Unburnt Ingredient

[+ve, positive; -ve, negative; ?, equivocal; with, with metabolic activation; without, without metabolic activation]

In vivo

Species	Test conditions	Endpoint	Results	Reference
Human (22 females and 61 males)	Study comparing mutation frequency at the hypoxanthine-guanine phospho-ribosyltransferase (HPRT) gene locus in lymphocytes with intake of a number of macronutrients, including starch.	Mutation	There was a statistically significant correlation between starch intake and increased frequency of mutations at the HPRT locus	Barnett *et al.*, 1999
Rat (F344) (30 males per group)	^{32}P-post-labelling study. Animals fed diets containing either 34% starch + 34% sucrose or 68% starch (no sucrose) [providing starch at approximately 27 or 54 g/kg bw/day] for 25 wk. DNA adducts measured in liver and colon.	DNA damage (adduct formation)	-ve	Lindecrona *et al.*, 2004

In vitro

Test system	Test conditions	Endpoint	Activation status	Results	Reference
Salmonella typhimurium TA97, TA98, TA100	Ames test on pyrolyzate (*i.e.* heated at 700 ºC for 1 min) of 400 µg starch.	Mutation	With and without S9	+ve	Kuroda *et al.*, 1985

References

Barnett Y A *et al.* (1999). Effect of dietary intake and lifestyle factors on in vivo mutant frequency at the *HPRT* gene locus in healthy human subjects. Mutation Research 431, 305-315.

Lindecrona R H *et al.* (2004). Effects of sucrose and cornstarch on 2-amino-3-methylimidazo [4,5-*f*] quinoline (IQ)-induced colon and liver carcinogenesis in F344 rats. Cancer Letters 209, 17-24.

Kuroda M *et al.* (1985). Mutagenicity of pyrolyzates of natural substances toward *Salmonella typhimurium* TA97. Agricultural and Biological Chemistry 49(6), 1893-1895