

FOOD INTOLERANCE NETWORK

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PUBLIC COMMENT ON DRAFT ASSESSMENT REPORT APPLICATION A603 RED 3 ERYTHROSINE IN FOOD COLOURING PREPARATIONS

By email: submissions@foodstandards.gov.au

The Food Intolerance Network opposes the further use of Erythrosine 127, as it does for all artificial colours, on the grounds that it is not safe and is known to affect children's health, learning and behaviour.

These critical aspects of children's lives are not tested for during food additive approval processes, nor has this additive been tested on children. For instance, the acceptable daily intake (ADI) of 0.1 mg/kg body weight/day for erythrosine, upon which FSANZ bases "safety", does not include any behavioural or learning dimensions nor any direct testing upon children. Therefore the definition of "safety" is a mental construct unrelated to real world issues.

In our view, the FSANZ Hazard Assessment Report and Dietary Exposure Assessment Reports, while worthy, laborious and accurate assessments of the published literature, are irrelevant to this main issue.

Erythrosine 127 is regarded as an unacceptable food additive by Royal Prince Alfred Hospital Allergy Unit and listed in their publications as Avoid due to its effects on children.

Clarke L, McQueen J, et al. (1996). "The dietary management of food allergy and food intolerance in children and adults." *Australian Journal of Nutrition and Dietetics* 53(3): 89-94.

Swain AR, Soutter VL, et al. (2002). Friendly Food. Sydney, Murdoch Books.

The Feingold Association has collected scientific references about Red #3 (erythrosine) (<http://www.feingold.org/Research/dye-studies.html>) and none of the news is good. Those references below marked with an asterisk were not included in the FSANZ Hazard Assessment Report.

*** DNA damage induced by red food dyes orally administered to pregnant and male mice. Tsuda S, et al, Toxicol Sci 2001, May;61(1):92-9**

We determined the genotoxicity of synthetic red tar dyes (amaranth - Red 2, allura red - Red 40, acid red - #106, new coccine - No. 18) currently used as food color additives in many countries, including Japan. The assay was positive in the colon 3 hours after the administration of amaranth and allura red and weakly positive in the lung 6 hours after the administration of amaranth. Acid red did not induce DNA damage in any sample at any sampling time. The 3 dyes induced DNA damage in the colon starting at 10 mg/kg. 6.5 mg/10 ml of new coccine induced DNA damage in colon, glandular stomach, and bladder. The 3 azo additives we examined induced colon DNA damage at very low doses.

Reproductive and neurobehavioral toxicity study of erythrosine (Red 3) administered to mice in the diet. Tanaka T, Food Chem Toxicol 2001 May;39(5):447-54

Erythrosine was given in the diet to provide levels of 0 (control), 0.005, 0.015 and 0.045% from 5 weeks of age of the F(0) generation to 9 weeks of age of the F(1) generation in mice, and selected reproductive and neurobehavioral parameters were measured. . .In movement activities of exploratory behaviour, several parameters were significantly changed in the high dose group, and those effects were dose-related in adult females in the F(0) and F(1) generations and in male offspring in the F(1) generation."

Estrogenic and DNA-damaging activity of Red No. 3 in human breast cancer cells. Dees C, et al, Environ Health Perspect 1997 Apr;105 Suppl 3:625-32

Exposure to pesticides, dyes, and pollutants that mimic the growth promoting effects of estrogen may cause breast cancer. Red No. 3 increased binding of the ER from MCF-7 cells to the estrogen responsive element. Consumption of Red No. 3, which has estrogenlike growth stimulatory properties and may be genotoxic, could be a significant risk factor in human breast carcinogenesis."

A study on the reproductive toxicity of erythrosine (Red No. 3) in male mice. Abdel Aziz AH, et al, Pharmacol Res 1997 May:35(5):457-62

The potential adverse effects of erythrosine (ER FD&C Red No. 3) on the spermatogenesis process were investigated in adult mice. . . sperm count as well as the percentage of motile sperms were significantly inhibited by about 50% and 57% respectively. Moreover. . .it increased the incidence of sperms with abnormal head by about 57% and 65% respectively. The induced increase in sperm abnormalities could enhance the spermatogenetic dysfunction and germ cell mutagenicity. These findings indicate that ER with used doses has a potential toxic effect on spermatogenesis in mice and in turn, it may affect its testicular function and reproductive performance."

*** Neurotransmitter Release from a Vertebrate Neuromuscular Synapse Affected by a Food Dye. Augustine G, Levitan H, Science Magazine, March 28, 1980, Vol. 207, pp. 1489-90**

. . .FD&C No. 3 . . .produced an irreversible, dose-dependent increase in neurotransmitter release. . . These results suggest that erythrosine might provide a useful pharmacological tool for studying the process of transmitter release, but that its use as a food additive should be re-examined."

*** Erythrosine B inhibits dopamine transport in rat caudate synaptosomes. Lafferman JA, Silbergeld EK, Science 1979 205:410-412**

Erythrosin B is a member of a class of fluorescein dyes that are suggested to elicit hyperkinesis when ingested by susceptible children. We found that erythrosin B inhibits dopamine uptake . . . Erythrosin B also decreased nonsaturable binding of dopamine to the synaptosome membrane. The inhibitory action of erythrosin B on dopamine uptake is consistent with the hypothesis that erythrosin B can act as a central excitatory agent able to induce hyperkinetic behavior.

The only current permitted use of erythrosine is to colour white cherries red "to meet consumer expectations for red coloured cherries" (A396, 2000). It is unclear why this use does not constitute misleading and deceptive conduct under the Trade Practices Act (1974, Section 52).

http://www.foodstandards.gov.au/srcfiles/A396_IR.pdf;
http://www.foodstandards.gov.au/srcfiles/A396_FA.pdf).

Leaving aside the FSANZ claim of potential benefits to consumers, for which FSANZ provides no evidence at all, we conclude the opposite to FSANZ regarding safety: in our view the use of erythrosine under the proposed conditions raises public health and safety concerns sufficient to lead to a rejection of the proposed change.

It seems extraordinary to our 7,000 member families that FSANZ are even considering extending the use of this known problem chemical at the very time that other better-informed jurisdictions are removing it from our food supply. This is a dangerous and unnecessary food additive, and its use should therefore remain restricted if FSANZ can lay any claim to protecting consumers.

A handwritten signature in dark ink, appearing to read 'H. Dengate', with a large circular flourish at the end.

Dr Howard Dengate
Co-convenor