

Food Standards Code
New Genetic Breeding Technologies
Should they be regulated?
Food derived using new breeding techniques

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Pre-amble:

Food Standards Australia New Zealand (FSANZ) is undertaking a review of the Australia New Zealand Food Standards Code (the Code) to consider its application to the food products of new breeding techniques (NBTs).

Specifically, the review is to consider the definitions for 'food produced using gene technology' and 'gene technology'. The review is being undertaken in accordance with section 113 (s.113) of the Food Standards Australia New Zealand Act 1991(FSANZ Act)

3.1.1 Questions - Genome contains new DNA,

Do you agree, as a general principle, that food derived from organisms containing new pieces of DNA should be captured for pre-market safety assessment and approval?

YES!

All new genetic modification techniques must be assessed for safety before consideration for introduction to our food chain. Product labelling must be mandatory in order to provide information to consumers. This includes gene editing, GM rootstock grafting, cisgenesis,

intragenesis, RNA interference, and null segregants.

I take exception to the use of the word, "capture", above. It is a euphemism that replaces grassroots terms such as, "constrained". Capture implies that GMO organisms have a right to fly away but we could capture them - ridiculous.

Should there be any exceptions to this general principle?

NO!

3.1.2 Questions - Genome unchanged by gene technology.

Should food from null segregant organisms be excluded from pre-assessment and approval?

NO!

If no, what are your specific safety concerns for food derived from null segregants

The assumption that there have been no unintended genetic changes is arrogant, so testing must occur before any products derived from these techniques are considered for access to our food chain. A full safety assessment is essential.

3.1.3 Questions - Genome changed but no new DNA

Are foods from genome edited organisms likely to be the same in terms of risk to foods derived using chemical or radiation mutagenesis?

NO

If no, how are they different? -

While chemical and radiation mutagenesis can increase the rate of random DNA point mutations, gene editing techniques cause DNA double strand breaks and can be used sequentially to make dramatic differences to DNA. They are also prone to additional unexpected mutations. They therefore carry a greater risk, so safety assessments must be mandatory before consideration for release to our food chain.

3.2 Questions - Other techniques

Are you aware of other techniques not currently addressed by this paper which have the potential to be used in the future for the development of food products?

RNA interference which can result in DNA methylation and gene silencing, and which technique has the potential to be used in the future for the development of food products. It poses unique risks such as gene silencing in non-target species and therefore needs to be assessed before it is considered for release to our food chain. Products produced using RNA interference must also be labelled as genetically modified in order for consumers to make informed choices.

3.2.1 Should food derived from other techniques, such as DNA methylation, be subject to pre-market safety assessment and approval?

Yes! DNA methylation is quite clearly a genetic modification technique and can result in heritable genetic changes. It therefore must be assessed for safety before consideration is given to it being released into our food chain.

3.3 Questions - Regulatory Trigger

Do you think a process-based definition is appropriate as a trigger for pre-market approval in the case of NBTs?

YES!

Genetically modified organisms pose unique risks and a process-based trigger is not only appropriate but must be mandatory for assessing these risks.

If yes, how could a process-based approach be applied to NBTs?

It must be mandatory for all genetic modification techniques to be assessed for safety and these new GM techniques are quite clearly genetic modification techniques under The Hazardous Substances and New Organisms Act (HSNO) 1996. This Act covers all new GM techniques, including RNA interference.

Are there any aspects of the current definitions that should be retained or remain applicable?

Standard 1.5.2 defines "food produced using gene technology" as "a food which has been derived or developed from an organism which has been modified by gene technology." It states that "gene technology means recombinant DNA techniques that alter the heritable

genetic material of living cells or organisms." This definition clearly includes gene editing techniques. The intent of the Gene Technology Act and Standard 1.5.2 was to capture all new GM techniques. Deleting a specific piece of DNA or editing of the DNA without adding new DNA is still recombinant as the DNA must join up again minus some vital, natural piece of it. Since RNA interference can also "alter the heritable genetic material of living cells or organisms" through DNA methylation the definition of gene technology in Standard 1.5.2 would be better changed to "gene technology means in vitro techniques that alter the heritable genetic material of living cells or organisms" for clarity.

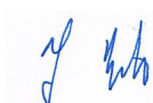
Standard 1.12-2 - Foods produced using gene technology should always require assessment for safety prior to consideration for release into our food chain. No research has been done to show there are no unintended consequences, nor has it shown that these foods or techniques are safe for commercial use. Assessment must be done by independent assessors with no conflicts of interest.

Further:

We have a right to know what we are eating and growing. If these techniques are safe and valuable then pre-market testing, full labelling and follow up monitoring will confirm this. That such criteria are opposed by those that wish to release genetically-modified foods is evidence that all is not as safe as claimed.

CRISPR was only invented 5 years ago . Reviews commissioned by the Austrian and Norwegian governments concluded that not enough is known about the risks (e.g. off target effects) posed by new GM techniques such as CRISPR. They recommended that products derived from these techniques require comprehensive case-by-case risk assessments. My advice is that we take their judgement and apply it to our food standard code.

Frida Inta,



Date: 17th April 2018.