[redacted]

To whom it may concern,

I would like to strongly oppose the approval of disease-resistant GMO bananas containing antibiotic marker genes.

The executive summary and other documents available on the Food Standards website do not provide any quantifiable background to justify the need for this technology. For example, how often the fungus TR4 has affected bananas in the last 5 years, the number of bananas and farms affected, the long term affects on farms regarding this fungus, and the economic consequences of the losses. This would seem a logical introduction to provide to therefore justify the development of such gene technology and potential introduction of risk into the food chain with unknown health consequences on humans (and animals).

It also fails to state what the existing treatments are for the TR4. A recent review on approaches to treat TR4 was published in February 2023 (Ismaila et al. 2023). This review summarises various methods to treat TR4 with innovative, environmentally friendly options that do not require gene technology.

The reference is below:
Ismaila A et al. (2023): Fusarium wilt of banana: Current update and sustainable disease control using classical and essential oils approaches. *Horticultural Plant Journal 9:1; 1-28,* Accessed from:
https://www.sciencedirect.com/science/article/pii/S246801412200022X

Regarding use of gene technology using antibiotic resistant marker genes, it is well-recognised that antibiotic resistance is becoming a significant health issue for humans with very few new antibiotics being developed.

The documents state:
".... Escherichia coli. nptII encodes the neomycin phosphotranferase type II protein (NPTII) and confers resistance to the antibiotics neomycin and kanamycin. "

It would seem counter intuitive and irresponsible that a food be released that has resistance to these antibiotics. In addition, antibiotics are typically used for bacteria, and anti-fungals are used for fungi. The information presented does not seem to address this, nor the potential implications of using antibiotic resistant marker genes on the mutation of this fungus.

In the inpatient hospital setting, I frequently come across patients with infected with MRSA, VRE, Metallo-beta lactamase (MBL). Patients with these resistant organisms require additional protocols, isolation, and have significantly increased length of hospital stays.

The application for approval does not provide any longitudinal human studies showing the

safety and long term health outcomes for humans eating GMO bananas, nor the effects of humans eating animals who have consumed these bananas.

The application also states, "*Typically, the main focus of the characterisation is on newly expressed (or potentially expressed) proteins, but other (nonprotein) substances may also be considered. In considering the safety of novel proteins it is important to understand that a large and diverse range of proteins are ingested as part of the normal human diet without any adverse effects.* ***Only a small number of dietary proteins have the potential to impair health, because of anti-nutrient properties or triggering of allergies in some consumers*** *(Delaney et al. 2008).*" (page 15, https://www.foodstandards.gov.au/code/applications/Documents/01_A1274_SD1.pdf):

Australia has recently been named the Allergy country of the world (https://www.abc.net.au/news/2020-12-21/australia-named-allergy-capital-of-the-world/13005406) and the rising number of allergies in children and adults is of significant concern. While bananas are not a common food allergen, modifying our food sources with proteins may have the potential to create new allergies in this previously tolerated food.

There are thousands of research papers reporting of the importance of the human gut microbiome and its strong link to dozens of health conditions, including MS, diabetes, eczema, allergies, asthma and autoimmune conditions. People with gut microbiome issues may not be able to digest their food well due to lack of digestive enzymes, stomach acid, and a lack of diversity / concentration of beneficial bacteria in their digestive system. The following statement does not adequately demonstrate that this is correct for all humans:

" *Laboratory studies also demonstrated MamRGA2 is susceptible to the digestive enzyme pepsin and would be thoroughly degraded before it could be absorbed during passage through the gastrointestinal tract."* (page 2, https://www.foodstandards.gov.au/code/applications/Documents/01_A1274_SD1.pdf) This statement sounds speculative with no scientific evidence of this statement being provided.

Lack of evidence of safety concerns is not the same as evidence of no safety concerns. "*No potential public health and safety concerns have been identified in the assessment of disease-resistant banana line QCAV-4*" (Page ii, https://www.foodstandards.gov.au/code/applications/Documents/01_A1274_SD1.pdf). This statement does not state who has undertaken this assessment. Furthermore, the word choice of "unlikely", "is not itself **suggestive** of toxicity to human" (page 19, https://www.foodstandards.gov.au/code/applications/Documents/01_A1274_SD1.pdf) does not provide any clear evidence of safety.

In addition, the outdated references from 30 years ago regarding the NPTII in food derived from GM crops could be supported by more recent studies, given the length of time these have been in use (Flavell et al. 1992; Nap et al. 1992; Fuchs et al. 1993a; Fuchs et al. 1993b).) (page 22, https://www.foodstandards.gov.au/code/applications/Documents/01_A1274_SD1.pdf) With regards to safety, it would be pertinent to receive information on what safety / health outcomes these studies were looking at and what specific timeframes - were these simply short term studies (hours, days) or longer term studies (such as randomised controlled trials, months, years).

Another issue of the effect of the release of this GM crop on other surrounding crops or non-GM crops has also not been demonstrated, with the potential for organic, biodynamic or conventional crops potentially and inadvertantly being affected. The potential loss of

organic status for organic farmers should also be addressed.

The decline of the insect population (including bees) is well-established. The affect of GM crops on the bee and pollinating insect population has not been reported here, nor the potential impact on any honey harvested from bees collecting pollen from these trees.

In summary, this application not present information to adequately justify the need for this technology, does not provide adequate longitudinal safety studies for human consumption, nor does it refer to existing published approaches that are safer and target TR4.

Regards,

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