



**Submission to Food Standards Australia New Zealand (FSANZ)
from Beef + Lamb New Zealand Incorporated (BLNZ)
Application A1186: Soy leghemoglobin in meat analogue products
14 February 2020**

Beef + Lamb New Zealand Incorporated (BLNZ) is the domestic market industry body representing producers, processors and retailers. It supports a scientifically rigorous process to deem the safety of foods imported into New Zealand. Through its Head of Nutrition, the following submission raises some concerns around the application A1186 – Soy leghemoglobin in meat analogue products, with the health and nutrition status of the New Zealand public top of mind.

NUTRITION AND HEALTH IMPACT

The application states the purpose of soy leghemoglobin as a haem-containing ingredient is to replicate the nutrition (source of iron), flavour and aroma of myoglobin, a haem-containing protein found in the muscle tissue of animals.

Further, FSANZ states consumers may benefit from greater choice of foods, particularly greater choice of meat substitutes with potentially superior attributes if this product is approved. It also states this product is likely to be a premium product so it is unlikely that it will become confused or substituted for meat in the short to medium term.

This implies it is as nutritionally equivalent and an appropriate nutritional substitute as naturally produced fresh meat. This certainly isn't the case, given that products including soy leghemoglobin are ultra-processed products and therefore would be considered by Ministry of Health eating and activity guidelines as a food to limit (Ministry of Health, 2015). As an example, its burger patty has a long ingredient list with a high level of sodium (approximately 6 times higher than fresh meat), over double the saturated fat of lean red meat, and a health star rating of 1.5.

In comparison, fresh, lean red meat is included in one of four of the core food groups recommended by the Ministry of Health that emphasises whole, natural foods for good health in New Zealand (Ministry of Health, 2015).

The FSANZ assessment has looked at dietary iron in isolation of the product, which means it overlooks the value of the entire food matrix, and what else the applicant's products contribute to the food supply and diets of New Zealanders.

Sodium, in particular is a mineral of concern in New Zealand diets of which there has been much work undertaken towards reducing the amount of added sodium in some food categories in the New Zealand food supply (Monro et al, 2015; Heart Foundation Project HeartSAFE, 2019).

Further, the unique, healthful food matrix of red meat brings other positive nutrients to the diet needs to be stressed. Red meat includes zinc, vitamins B12, thiamin (B1), riboflavin (B2), niacin (B3), pantothenic acid (B6), complete protein (Purchas et al, 2014) that cannot be nutritionally substituted in its entirety, by the applicant product.

FSANZ makes the point in its assessment, that the absence of meat proteins in the proposed meat analogue product may decrease haem iron bioavailability.

If FSANZ is to consider the impact of overall nutritional status of New Zealanders from imported foods to New Zealand, it needs to look at the entire food matrices of foods. The nutritional quality of foods exported and imported to New Zealand compared to dietary guidelines has recently been highlighted by Rush & Obolokin, 2020, which concluded *“the high prevalence of food insecurity and obesity in New Zealand could be partially attributed to the disconnect between the quantity, nutritional quality and diversity of foods imported and exported”*.

CONSUMER INFORMATION

Given the considerations above, it is recommended labelling needs to highlight the product is not a dietary substitute for meat. As the Code does not apply to foods intended for immediate consumption (such as fast food), and is only available to consumers upon request, we ask that consideration is given to consumer education and advertising to make this absolutely clear.

RESEARCH AND DATA GAPS

- FSANZ has made a dietary intake assessment of iron in the Australian and New Zealand diets based on nutrition survey data. The New Zealand nutrition survey data is dated with children's nutrition status last published in 2002 and adults in 2011. Given the rapid change in products available to New Zealanders since these surveys, the question is raised as to whether this provides an accurate picture of iron intake and iron status among the New Zealand population, devoid of a current national nutrition survey for both adults and children.
- Assumptions have been made about the amount of the applicant's product that would be eaten. Consideration needs to be given to modelling to reflect current eating patterns of New Zealanders.
- Given the current data set does not capture the population under 2 years of age, provisions need be considered for the safety of this product being fed to this vulnerable age group.

- The assessment of iron composition of both the applicants' product and New Zealand meat has been made on raw product. Consideration needs to be given to the fact iron increases on cooking, as consumed for red meat (Purchas et al, 2014) and the applicant product.
- As FSANZ highlights below, there is limited research on soy leghemoglobin proving its long term impact on human health:
 - *The evidence is conflicting on the effect of plant proteins similar to those that would be present in the proposed Impossible Foods meat analogue products on haem iron bioavailability and there is limited research in this area. Some studies have found that partial substitution of meat with soy protein increased the bioavailability of haem iron (Lynch et al. 1985) while others have reported that the absorption of haem iron from meat-free meals is half that of haem in a meal with meat when protein content is constant (Hallberg et al. 1979). A more recent study found that the addition of cereal, pea or lentil protein to haem iron did not affect iron absorption but soy protein had an inhibitory effect. However the relevance of this study is unclear as the haem iron used in the study was dissociated from globin and pure haem iron has low solubility at low gastric pH (Vaghefi et al. 2002; Weinborn et al. 2015).*
- Studies supporting the safety of genetically engineered derived soy leghemoglobin reported a conflict of interest, in that they included authors who worked for Impossible Foods. Until the impact of soy leghemoglobin is better understood with further long-term testing by independent researchers, a precautionary approach should be taken.

ENVIRONMENTAL AND ETHICAL CLAIMS

The applicant claims to be offering a solution that is more ethical and environmentally friendly. This raises the questions of whether genetically modified derived ingredients meet this criteria, and if these claims can be substantiated, to inform the New Zealand public accordingly. And does this account for the ethics around animal testing the applicant has undertaken with the ingredient that looked at the effects on female rats' reproductive systems?

OTHER CONSIDERATIONS AND QUESTIONS

- The product claims to have no cholesterol, but it does have coconut oil as an ingredient where research trials overall show coconut oil raises all types of cholesterol in the blood (Heart Foundation, 2014).
- Is the applicant intending to patent the ingredient in New Zealand?
- If not and if the application is accepted, will it be expressly permitted in meat analogue products only?

SUMMARY

Beef + Lamb New Zealand Incorporated appreciates the opportunity to provide a submission on application A1186: Soy leghemoglobin in meat analogue products. Beef + Lamb New Zealand Incorporated supports a rigorous scientific evaluation and process on foods for intended sale, with the public's safety and health a priority.

When looking at the contribution a food brings to the diet, the value of the natural food matrix cannot be understated. This must be considered when the applicant's novel ultra-processed product with numerous ingredients, including one derived from genetic modification technology, could be perceived in the same regard, nutritionally, as fresh red meat, which is recognised as a whole, core food contributing essential nutrients.

For this reason, if the application is accepted, it is strongly recommended labelling, consumer education, and consumer information at point of purchase, including when intended for immediate consumption, makes it clear it is not a dietary substitute for meat.

We believe a precautionary approach be taken, and the application currently under consideration by the European Food Safety Authority be factored into the Food Standards Australia and New Zealand process.

REFERENCES

- Ministry of Health. 2015. Eating and Activity Guidelines for New Zealand Adults. Wellington: Ministry of Health. Ministry of Health. 2015. Eating and Activity Guidelines for New Zealand Adults. Wellington: Ministry of Health.
- Monro D, Mhurchu CN, Jiang Y, Gorton D, Eyles H. Changes in the sodium content of New Zealand processed foods: 2003-2013. *Nutrients*. 2015;7(6):4054–4067. doi:10.3390/nu7064054.
- Heart Foundation Project HeartSAFE. 2019. *Heart Foundation Food Reformulation Targets*. [Accessed 13 February 2020] <https://www.heartfoundation.org.nz/professionals/food-industry-and-hospitality/reducing-sodium-and-sugar-in-processed-foods>
- Purchas R, Wilkinson B, Carruthers F, Jackson F. A comparison of the nutrient content of uncooked and cooked lean from New Zealand beef and lamb. *Journal of Food Composition and Analysis*. 2014; 35(2): 75-82. <https://doi.org/10.1016/j.jfca.2014.04.008>
- Heart Foundation. *Coconut Oil and The Heart: Evidence Paper*. Authored by Dr Laurence Eyres. 2014. [Accessed 13 February 2020]. <https://www.heartfoundation.org.nz/shop/submissions/coconut-and-the-heart-evidence-paper.pdf?1581565351>
- Rush E, Obolonkin, V. Food exports and imports of New Zealand in relation to the food-based dietary guidelines. 2020. *Eur J Clin Nutr* 74, 307–313. <https://doi.org/10.1038/s41430-019-0557-z>

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