

Consideration by the ACNFP of Go Wolffia as a traditional food from a third country (Regulated Product Application 128).

Background

At the 148th meeting of the Advisory Committee on Novel Foods and Processes (ACNFP) the traditional food from a third country notification dossier for Go Wolffia (Wolffia arrhiza and Wolffia globose) was considered. These are the small spherical flowering plants commonly known as duckweed that reproduce asexually. Traditionally they have been grown in open pond systems in Asia, in countries such as Thailand. They are fast growing plant that are harvested frequently during their growing season and incorporated cooked as a low-cost vegetable into local cooked dishes.

The applicant is seeking authorisation for two edible species of Wolffia, to be grown in a controlled, vertical farming aquatic system. The applicant intends to market the product as a fresh leaf product, to be used as a fresh vegetable.

The Committee's discussion

The advice of the Committee to the Food Standards Agency is summarised below. Please note the Committee did not consider any potential health benefits from consuming the food as the focus of the novel food assessment is to ensure the food is safe, not misleading and not putting consumers at a nutritional disadvantage.

Identity of the traditional food

The Committee recognised that some of the Wolffia species had been consumed for a long time in Asia as a cooked product. They questioned whether sufficient

evidence had been provided that the same plant was to be grown in the controlled production system proposed by the applicant. It was also noted that the product is traditionally used cooked, but it was the applicant's intention to sell the product fresh. Therefore, there were uncertainties on whether the experience of safe traditional use could be directly applied to UK consumers.

The Committee members noted that two out of the eleven known species of duckweed (*Wolffia* species) are edible. The question arises as to whether there are toxic constituents present in the 9 non-edible species and whether these constituents are also present but in lower levels in the two 'edible' species? Concerns were raised that the plant being used had not been characterised in terms of anti-nutritional, toxic or other concerning factors present in the duckweed that needed to be considered and managed. The potential for the cooking step in the traditional use to be used to manage antinutritional factors was recognised. However, insufficient evidence on this aspect had been provided in the application to make an assessment.

The Committee also queried how potential genetic variation was managed in the starter material for the process. Insufficient information was provided to characterize the starting material and, on the processes, to select seed, characterised lines (e.g. DNA sequencing), store material in a gene bank, the cloning of the plants and how the applicant maintains the seed/germ line. Therefore, there were questions on whether the starting material was genetically stable and had not changed its characteristics since being introduced to the aquatic farming system.

Production Process

The Committee raised concerns over the lack of a well described food management system and detailed HACCP/quality control plan. The applicant has identified contamination of the system both from microbes and chemical contaminants as a risk but as a detailed plan had not been submitted, members could not be confident that the production process is effective in managing the risks. Members recommended that a detailed food safety system management plan is completed so they can understand what the applicant believes the risks and the critical controls to be in their process.

Given the modernised nature of the production process described a question was asked of risk managers on whether a product could be considered a traditional food. The Committee noted that the risks would differ between traditional and modernised production methods, potentially reducing risks for consumers. However, by applying a different production method the evidence of the

traditional use is less applicable.

Compositional data

The analytical data supplied by the applicant suggested that the production process was not properly controlled. This is because there were variations of 5 to 10 times for some components across samples e.g. oxalate levels. The Committee queried the source of the variability in the composition results provided. Specifically, whether microbial and heavy metal contamination had been effectively monitored and managed.

The applicant suggests the product has a 28-day shelf life. However, the basis for this assertion and how it is achieved is not detailed in the application. The Committee were sceptical that a wet, fresh vegetable/ plant product, would not degrade in this time period, suggesting a potential safety concern.

Specification

No specific points were raised in relation to this section of the notification.

Proposed conditions of use for the EU market

No specific points were raised in relation to this section of the notification

Nutrition

The applicant in their dossier suggests that a dried form of the traditional food is a good source of protein. It has been clarified that dry form is not part of the application under review. As the wet form is being assessed the Committee commented that the product could not be considered a good source of protein as there would only be 2g protein in 100g of duckweed. While this would be acceptable for a vegetable where the composition information would be similar to other products it may replace, it was commented that there was the potential for consumers to be nutritionally disadvantaged if the ingredient was used to replace other ingredients in the diet.

Allergenicity

The Committee noted that any ingredient containing protein could invoke an allergic reaction in someone developing a duckweed allergy or where cross

reactivity is seen to another food allergen. The applicant had highlighted evidence of contact allergy but no literature on allergic reactions from consumption. The potential for the product to trigger reactions based on lipid transfer proteins was identified but it was unclear whether this would be an issue for *Wolffia* species. The Committee considered the potential for allergic reactions was thought to be low as the product is a fresh leaf product, but the potential could not be ruled out.

10-day Consultation

The Secretariat posted the draft summary online for a 10-day consultation to allow members of the public to review the advice. The Secretariat received no comments from the public during the consultation period. Therefore, no further additional information to inform the ACNFP risk assessment was provided, and the advice remained as drafted.

Conclusion

The Committee identified several areas of concern where further information and assessment would be required to provide reassurance on the safe use of *Wolffia* by the UK population. The concerns raised centred around characterising the novel food further, both in terms of the genetic variability of the source material and the potential for inherent antinutritional constituents that would need to be managed in the process.

The lack of detail around the food management system and the variability in the compositional information for the novel ingredient were highlighted as uncertainties to be addressed. Finally, the basis for the four-week shelf life had not been fully evidenced raising queries on how microbial and chemical safety of the product could be assured.

Based on these areas of uncertainty the Committee view was that they could not reach a conclusion on *Wolffia*'s safety, and therefore more information would be necessary to properly inform risk management decisions.