

## ADVISORY COMMITTEE FOR NOVEL FOODS AND PROCESSES

UV-TREATED MUSHROOMS (*AGARICUS BISPORUS*) WITH INCREASED VITAMIN D CONTENT – DOSSIER 190

## ISSUE

1. The Netherlands Competent Authority (CA) has prepared comments on an application under the Novel Foods Regulation (EC) No 258/97, for the authorisation of mushrooms treated with UV light to increase vitamin D levels. Whilst the process for producing UV treated mushrooms has been authorised, under the Novel Food Regulations a novel process produced by another applicant cannot be assessed by the substantial equivalent route and a full authorisation is required..
2. The Committee is asked whether it agrees with the initial opinion and whether it would like to make any further comments or objections on this application. The Committee's advice will form the basis for the UK's formal response to the Commission.

## Background

3. On 5 October 2017 the European Commission forwarded the Netherlands Competent Authority's positive Initial Opinion on an application made by Banken Champignons Groep BV & JK Holding under Article 4 of the Regulation, for UV-treated mushrooms (*Agaricus bisporus*). Member States have until 5 December 2017 to submit any comments and/or reasoned objections to the Netherlands assessment.
4. The application dossier is attached as **Annex A**, the Netherlands Initial Assessment Report is attached as **Annex B**. A request from the Netherlands and the applicant's response providing additional information is at **Annex C**. **Annex A, B and C** contain confidential information.

## This application

5. Mushrooms are the edible fleshy fruiting bodies of certain fungi. The most commonly cultivated species is *Agaricus bisporus*, which has a long history of cultivation and consumption. Mushrooms contain high levels of ergosterol (provitamin D<sub>2</sub>), the principle sterol in fungi, and on exposure to wavelengths <315nm from sunlight or artificial ultraviolet light, ergosterol is converted to

Vitamin D<sub>2</sub>. Mushrooms cultivated indoors in general contain lower levels of Vitamin D<sub>2</sub> compared to those grown outdoors.

6. In northern Europe adequate intakes of Vitamin D in the diet may be difficult to achieve. This application is to increase the level of vitamin D in *Agaricus bisporus* grown under controlled indoor conditions by using UVC irradiation to convert ergosterol to vitamin D<sub>2</sub>.
7. The applicant states the consumption of mushrooms in Member States at the highest intake level (95<sup>th</sup> percentile) is 48.8g/day (Italy) which equates to 5µg of vitamin D. This intake level is below the recommended daily intake for vitamin D of 10µg/day. An EFSA opinion on the Tolerable Upper Intake Level of vitamin D (EFSA 2012) established that the upper limit of vitamin D intake for adults is 100µg/day. The NOAEL was determined at an intake level of vitamin D of 250µg/day which the applicant states provides for a very wide margin of safety.
8. The Netherlands opinion states that the VNV Committee takes the view that for very young children, food supplements are the main source of vitamin D it is therefore highly unlikely that infants consuming UV exposed mushrooms will exceed the tolerable upper intake level of 25µg of vitamin D per day as established by EFSA.
9. The toxicant associated with *Agaricus bisporus* is the phenylhydrazine derivative agaritine. The applicant refers to a study by Simon et al<sup>1</sup> which found no adverse effects in UV-exposed mushrooms and that intensive UV exposure does not increase the mushrooms' agaritine content.
10. The opinion suggests that tests demonstrated that microbiological safety is not significantly affected by UVB treatment,

## COMMITTEE ACTION REQUIRED

11. Members are asked whether they agree with the initial opinion from the Netherlands CA and whether they wish to make any comments on the application.
12. The Committee's advice will form the basis for the UK's formal response to the opinion of the Netherlands Competent Authority

---

<sup>1</sup> Simon RR, Phillips KM, Horst RL, Munro IC. Vitamin D Mushrooms: Comparison of the composition of button mushrooms (*Agaricus bisporus*) treated postharvest with UVB light or sunlight. J Agric Food Chem, 2011,59:8724-8732. (available via <http://pubs.acs.org/doi/abs/10.1021/jf201255b>)

**Annexes attached:**

- Annex A** Application for the approval of UV-treated mushrooms (*Agaricus bisporus*) with increased vitamin D content.
- Annex B** Initial Opinion of the Netherlands Competent Authority.
- Annex C** Netherlands request and the applicant's response to request for further information.