

Compound products - Aflatoxin Contamination

A note from the Government Chemist on sampling and analysis for aflatoxin contamination in Compound Products containing nuts

1. The Government Chemist has been involved in referee cases concerning products where nuts formed a part of a compound product. For many compound products when aflatoxins are found, it can be assumed that they arose from the nuts present. This is especially the case where the other ingredients are highly refined foodstuffs for which the conditions for mould growth and mycotoxin production are ruled out by their processing and/or composition.

2. Thus, if there is no evidence to the contrary, the concentrations of aflatoxins in the nuts themselves can be calculated based on the amount of nuts in the product. [1] The Government Chemist makes this calculation on the basis of information provided by the food business on the specification and manufacturing tolerance. For the avoidance of doubt, the specified inclusion level *plus* the tolerance is used. Thus if nuts were included at a specification of $60\% \pm 5\%$ the calculation would be made assuming 65% nuts in the product.

3. Some compound products contain, in addition to nuts, other matrix ingredients for example sesame tahina for which there are literature references to possible aflatoxin contamination. The Government Chemist believes it is not safe to conclude *beyond reasonable doubt* that such matrix ingredients do not contain aflatoxins without further exploration of the possibilities. Since, for rejection of a lot, the maximum limit for the nuts must be exceeded beyond reasonable doubt, in this case it is no longer possible for the Government Chemist to assume all the aflatoxins arose solely from the nuts in the product [2].

4. In these circumstances in a recent referee case the Government Chemist advised that the sample should be separated into two fractions:

- a nut rich fraction and
- a nut free fraction.

Because the nuts were present as a surface layer this proved possible, although labour intensive, by slicing. Both fractions were analysed separately and the results mathematically combined to yield overall aflatoxins concentrations.

5. In general scrutiny of such data would then support one of the following opinions:

- The nut rich fraction contains all of the aflatoxins and the nut free fraction contains no detectable aflatoxins. In this instance the calculation in paragraph 2 above can be completed and the findings appraised against the limits set down in regulation 1881/2006/EC as amended.
- The aflatoxins are distributed across both fractions. In this case, if the amounts of both nuts and the other ingredient are known it will be possible to carry out calculations to *estimate* the aflatoxins concentrations in the nuts.
- The aflatoxins are predominantly in the nut free fraction. Where no limits are set a proportionate judgement will need to be made from a consumer protection point of view.

References

[1] COMMISSION REGULATION (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs deals with dried, diluted, processed and compound foodstuffs.

Article 2 provides that:

1. When applying the maximum levels set out in the Annex to foodstuffs which are dried, diluted, processed or composed of more than one ingredient, the following shall be taken into account:

- (a) changes of the concentration of the contaminant caused by drying or dilution processes;
- (b) changes of the concentration of the contaminant caused by processing;
- (c) the relative proportions of the ingredients in the product;
- (d) the analytical limit of quantification.

2. The specific concentration or dilution factors for the drying, dilution, processing and/or mixing operations concerned or for the dried, diluted, processed and/or compound foodstuffs concerned shall be provided and justified by the food business operator, when the competent authority carries out an official control. If the food business operator does not provide the necessary concentration or dilution factor or if the competent authority deems that factor inappropriate in view of the justification given, the authority shall itself define that factor, based on the available information and with the objective of maximum protection of human health.

3. Paragraphs 1 and 2 shall apply in so far as no specific Community maximum levels are fixed for these dried, diluted, processed or compound foodstuffs.

4. As far as Community legislation does not provide for specific maximum levels for foods for infants and young children, Member States may provide for stricter levels.

[2] Commission Regulation (EC) 401/2006 laying down methods of sampling and analysis for the official control of the levels of mycotoxins in foodstuffs

Section D.8. of Annex I provides for rejection of a lot if one or more of the laboratory samples exceeds the maximum limit beyond reasonable doubt taking into account the correction for recovery and measurement uncertainty.

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