

REDUCING EXPOSURE TO MYCOTOXINS: INFORMED CHOICES

Mycotoxins may occur in everyday foods such as cereals, tree nuts, dried fruit and spices. Their occurrence depends on numerous conditions, from cultivation to storage. Exposure can be reduced, but it is important to distinguish useful consumer choices from the much broader responsibilities of the food supply chain. No home check can establish the absence of mycotoxins: this requires prevention, adequate sampling and analysis.

A VARIED DIET REDUCES RELIANCE ON A SINGLE SOURCE

Mycotoxins are not evenly distributed among foods or among batches of the same food. Habitually eating large amounts of one product can increase that source's contribution to overall exposure when the substance is present. Varying cereals and other food sources while maintaining a nutritionally balanced diet is therefore sensible. The World Health Organization explicitly recommends dietary diversity as one measure that may help reduce exposure.

Diversifying the diet does not mean excluding maize, wheat, rice, tree nuts or other valuable foods. It means avoiding arbitrary restrictions and an excessively monotonous diet, particularly where one food makes up a very large proportion of what is eaten.

CHOOSING AND STORING FOOD: PRECAUTIONS THAT MATTER

When shopping, prefer intact packaging, properly stored products and reliable suppliers. With loose goods, hygiene, protection from moisture and stock rotation are important. Freshness may be a practical indication of good management, but it is not equivalent to an analytical result.

At home, cereals, flour, dried pulses, nuts and spices should be stored as instructed on their labels, away from leaks, dampness and excessive heat. Clean, well-sealed containers help limit moisture absorption and insect infestation. Buying quantities consistent with consumption and checking stocks periodically can avoid keeping products for unnecessarily long periods.

Drying and keeping products dry may prevent or limit mould growth and further toxin production. They do not necessarily remove mycotoxins formed before purchase: proper home storage is preventive, not a way of decontaminating a product.

VISIBLE MOULD: A WARNING NOT TO IGNORE

For cereal grains, dried fruit and tree nuts, visible mould, marked discolouration or abnormally shrivelled appearance is a reason to discard the suspect product. Simply cutting away the visibly spoiled part and eating the rest in the hope that no toxins are present is not prudent. Moulds and their metabolites may affect parts of the food that are not immediately visible.

Conversely, the absence of visible mould does not prove that food is free of mycotoxins. An apparently normal grain may come from a batch contaminated in the field or during storage. Visual examination helps identify obvious defects but does not replace chemical analysis.

COOKING, ROASTING AND WASHING: WHAT THEY CANNOT GUARANTEE

Many mycotoxins are relatively stable and may survive ordinary processing, at least in part. Any reductions from cooking, roasting, washing, milling or other operations depend on the toxin, food matrix and processing conditions. Some processes can also redistribute substances among different food fractions.

It is therefore incorrect to assume contaminated flour is made safe by cooking, or that roasting nuts makes a non-compliant batch safe. Home techniques promoted as 'detoxifying' also require specific evidence of effectiveness and safety and should not be treated as guarantees.

ORGANIC PRODUCTION, GEOGRAPHICAL ORIGIN AND QUALITY: NO AUTOMATIC GUARANTEES

Mycotoxins are natural compounds produced by certain fungi. Their formation is influenced by climate, crop conditions, insects, harvest timing, drying and storage. They can therefore affect conventional and organic production, very different agricultural regions and foods of high commercial quality.

Mountain origin, organic farming or a region's reputation can provide information about production, but none proves the absence of mycotoxins. Even an area with little industrial contamination can experience conditions conducive to toxigenic fungi. The decisive evidence concerns preventive practices, traceability, representative sampling and controls targeting the particular food matrix.

CHILDREN AND PEOPLE WITH LESS VARIED DIETS

At the same food concentration, exposure expressed per kilogram of body weight may be higher in children, who weigh less and have proportionally different consumption patterns from adults. Specific provisions therefore apply to certain food categories intended for infants and young children. It is important to follow products' age recommendations and public-health dietary advice rather than replacing them with improvised rules.

The same attention to dietary variety is sensible for those whose diets, by choice or necessity, rely heavily on a few raw materials. The issue is not any single food in isolation but total exposure arising from actual consumption and contaminant concentrations.

PRIMARY RESPONSIBILITY LIES WITH THE SUPPLY CHAIN

Consumers can store food properly, avoid visibly spoiled products and maintain a varied diet. They cannot, however, establish by sight whether a batch complies with legal limits. The most important protections are good farming and storage practice, raw-material selection, food business operators' own checks, laboratory analysis and official controls.

Regulation (EU) 2023/915 sets maximum levels for several mycotoxins in certain food categories; it is not a declaration that all contaminants are absent. Analytical testing must also consider the uneven distribution of mycotoxins in lots: sampling, governed for official controls by Implementing Regulation (EU) 2023/2782, is integral to the reliability of results.

REDUCING EXPOSURE: WHAT CAN BE DONE

Everyday choices help, but control of mycotoxins mainly starts along the supply chain

ALONG THE SUPPLY CHAIN

- Good agricultural practices
- Proper drying and storage
- Targeted sampling and analysis
- Traceability and batch control

AT HOME

- Varied and non-monotonous diet
- Consume whole products and remove damaged parts
- Proper storage (dry and clean)
- Discard visibly altered products

Normal appearance and cooking do not guarantee the absence of mycotoxins.

A PRACTICAL CONCLUSION

The most rational choice is neither indiscriminately avoiding entire food categories nor seeking a purity that cannot be established by the senses. It is to combine a varied diet, purchases from controlled supply chains, proper storage and attention to signs of spoilage. Analytical tests and supply-chain controls remain indispensable where the presence and concentration of a particular mycotoxin need to be established.

Ultimately, effective prevention is the result of many proportionate measures, from field management to the household cupboard. Consumers have a useful role but should not be left alone to guarantee the safety of the food they buy.

SCIENTIFIC AND REGULATORY REFERENCES

- [1. World Health Organization \(WHO, 2023\). Mycotoxins – fact sheet and recommendations for reducing risk.](#)
- [2. FAO. Mycotoxins: A silent risk to plants, people and animals.](#)
- [3. Commission Regulation \(EU\) 2023/915 on maximum levels for certain contaminants in food, as amended.](#)
- [4. Commission Implementing Regulation \(EU\) 2023/2782 on sampling and analysis methods for mycotoxin controls in food.](#)
- [5. IARC \(2016\). Reducing exposure to mycotoxins – IARC Working Group Report.](#)