

# Food supplements containing spirulina: choose trustworthy supply channels

Under the national nutrivigilance scheme, reports of adverse effects potentially associated with the consumption of food supplements containing spirulina have been brought to the attention of ANSES. These reports led ANSES to assess the risks associated with the consumption of this type of food supplement. On 30 November, ANSES issued an opinion on the risks associated with the consumption of food supplements containing spirulina.

Spirulina (a cyanobacterium that is generally offered for sale in powder form) has long been a traditional food consumed in several countries. In France, it is found on the market as a conventional food (alone or as an ingredient) or as a food supplement, with claims for beneficial effects on health.

Several cases of adverse effects occurring following the intake of food supplements containing spirulina have been brought to the attention of the ANSES nutrivigilance scheme or published in scientific journals. The doses consumed in these cases are not precisely known, and the reported effects vary considerably: digestive disorders, allergies, muscle or liver damage.

According to the available studies, spirulina does not seem to present a health risk at low doses (up to several grams per day in adults). Nevertheless, the available epidemiological studies concern too few subjects to be able to demonstrate rare effects such as individual hypersensitivity.

Products containing spirulina can be contaminated by cyanotoxins (especially microcystins), bacteria or trace metal elements (lead, mercury and arsenic).

## The Agency's recommendations for consumers

In view of the risk of spirulina becoming contaminated by cyanotoxins, bacteria or trace metal elements, the Agency recommends that consumers of food supplements containing spirulina choose trustworthy supply channels controlled by the public authorities (compliance with French regulations, traceability and identification of the manufacturer).

Furthermore, in light of the characteristics of spirulina and the adverse effects reported, ANSES advises against the consumption of these food supplements by individuals suffering from phenylketonuria (a rare genetic disease related to accumulation in the body of the amino acid phenylalanine) or with an allergic predisposition.

Lastly, the Agency emphasises that spirulina is not a reliable source of vitamin B12 for vegans, as it is mostly in the form of an inactive analogue. Furthermore, the consumption of 5 g/d of spirulina (maximum quantity recommended by certain food supplements) provides from 7 to 8.5 mg of beta-carotene, whereas the maximum daily intake of beta-carotene from food supplements has been estimated at 7 mg/d, which is in addition to spontaneous intake.

## Other recommendations

In view of the risk of spirulina becoming contaminated by cyanotoxins (especially microcystins), bacteria or trace metal elements, the Agency insists on the importance of the quality of the water used in spirulina cultivation and of the producers' full control over the different stages of production.

ANSES considers it necessary to conduct an expert appraisal to establish a threshold for microcystins in food supplements containing spirulina that takes into account other dietary intakes of microcystins, and the tolerable daily intake (TDI) of 0.04 µg/kg/d set by the WHO for chronic exposure. In addition, in the light of this TDI, ANSES deems it necessary to reassess the limit for microcystins set at 1 µg/g for food supplements containing Klamath algae.

The Agency reminds healthcare professionals of the need to report to its nutrivigilance scheme any adverse effects liable to be associated with the consumption of food supplements about which they become aware.

Lastly, ANSES emphasises the value of setting up a joint international project on the monitoring of adverse effects associated with the consumption of food supplements.

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[Opinion of the French Agency for Food, Environmental and Occupational Health & Safety on the risks associated with the consumption of food supplements containing spirulina](#)