Arsenic speciation

The toxicity or biological effect of an element largely depends on the chemical species present. For arsenic (As), the inorganic species arsenite, As(III) and arsenate, As(V) can cause cancer and a range of adverse effects. This has resulted in regulation of the maximum levels of inorganic arsenic that are permitted in rice and rice-based foodstuffs marketed in the EU.

Arsenic speciation in foodstuff

Many foodstuffs contain organically-bound arsenic species. For example, most of the arsenic in fish and shellfish is in the form of arsenobetaine that presents no health risk. Therefore measurements of total arsenic concentrations do not always provide an adequate safety assessment.

ALS Scandinavia offers arsenic speciation analyses. The analysis is accredited for measurements of inorganic arsenic in foodstuffs according to European standard method EN 16802:2016.

Table 1 shows the maximum levels of inorganic arsenic allowed in commodities currently identified as making major contributions to dietary intakes.

Arsenic speciation in other matrices

In addition to foodstuff, we provide non-accredited analyses in:

* waters

* wastes

* environmental solids

* urine

Our analysis packages include the two commonly found arsenic metabolites, monomethylarsonate (MMA) and dimethylarsinate (DMA) or cacodylate as well as inorganic arsenic species, As(III) and As(V). The analyses are performed by HPLC-ICP-MS.

Foodstuffs		Maximum levels (mg/kg wet weight)
3.5	Arsenic (inorganic)	
3.5.1	Non-parboiled milled rice (polished or white rice)	0,20
3.5.2	Parboiled rice and husked rice	0,25
3.5.3	Rice waffles, rice wafers, rice crackers and rice cakes	0,30
3.5.4	Rice destined for the production of food for infants and young children	0,10

Table 1: Commission Regulation (EU) 2015/1006 of 25 June 2015 amending Regulation (EC) No 1881/2006 as regards maximum levels of inorganic arsenic in foodstuffs.

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