

INFO SHEET

Bixin and AZO dyes with LC-MS/MS

Sudan red is a coloring additive which is not allowed in food products. This substance possibly harbours carcinogenic properties. Sudan red is often found in Oriental products such as chili powders, spicy sauces but also in bottles red palm oil.

As a coloring additive Sudan red is not allowed in the EU for use in food products hence it has no E-number. Additives, such as coloring additives, can only be used after series of tests which prove that the use has no indication of risks for public health.

Sudan red may be used in other products such as floor wax and shoe polish

Method description

Extraction

1. Ground spices

A ground sample is extracted with acetonitril/methanol.

2. Food

A ground sample is extracted with acetonitril/methanol.

3. Fat , oil and oleoresins

The oil is dissolved in acetonitril/methanol

Analysis

The obtained extract is analyzed on a liquid chromatograph with double in-line mass-spectrometers (LC-MSMS).

Quality control of method of analyzing.

The extraction is checked with an analyt-containing verification sample (chili powder) and spiking of samples.

Round Robin tests : FAPAS

Scope of Accreditation

Matrices : Ground spices, mix of spices, Oleoresins, extracts of herbs and spices

Analytes (CAS nr):

Sudan I (842-07-9)	Sudan II (3118-97-6)	Sudan III (85-86-9)
Sudan IV (85-83-6)	Sudan red 7B (6368-72-5)	Sudan red G (1229-55-6)
Sudan red B (3176-79-2)	Sudan Orange G (2051-85-6)	
Toluidine Red (2425-85-6)	Para red (6410-10-2)	Butter yellow (60-11-7)
Orange II (633-96-5)	Rhodamine B (81-88-9)	
Fast Garnet GBC (97-56-3)		

Analytes (CAS nr) out of the scope of Accreditation:

Bixin (6983-79-5)	Metanil Yellow (587-98-4)
Auramine-O (2465-27-2)	Orange OT (2646-17-5)
Sudan Black B (4197-25-5)	

Turn over times:

urgent
normal

next working day
<5 working days

Minimal sample quantity: >100 gram product

Reporting limits :

Reporting limits (LOQ) (<<limit of detection) in all matrices
ground spices & oleoresins (ppb)

Sudan 1	<10
Sudan 2	<10
Sudan 3	<10
Sudan 4	<10
Sudan red 7B	<10
Sudan red G	<10
Sudan red B	<10
Sudan Orange G	<10
Sudan Black B	<10
Para red	<10
Butter yellow	<10
Metanil Yellow	<10
Auramine -O	<10
Toluidine red	<10
Fast Garnet GBC	<10
Orange II	<10
Orange OT	<10
Rhodamine B	<10
Bixin	<100

Spreading range & measurement insecurity

	Recovery	RSDr-demand*		RSDR-demand*		Measurement insecurity
		$C_{rap} - 10 * C_{rap}$	$>10 C_{rap}$	$C_{rap} - 10 * C_{rap}$	$>10 C_{rap}$	
Sudan 1	75-115%	< 18%	< 15%	<20%	< 15%	LOQ+0,6*c
Sudan 2	75-115%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Sudan 3	75-115%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Sudan 4	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Sudan red 7B	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Sudan red G	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Sudan red B	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Sudan Orange G	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Sudan Black B	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Para red	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Butter yellow	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Metanil Yellow	70-100%	<18%	<15%	<20%	<15%	LOQ+0,6*c
Auramine-O	70-100%	<18%	<15%	<20%	<15%	LOQ+0,6*c
Toluidine red	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Fast Garnet GBC	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Orange II	60-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Orange OT	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Rhodamine B	70-100%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c
Bixin	65-90%	< 18%	< 15%	<20%	<15%	LOQ+0,6*c

* In case there are enough analyt-containing samples the spreading range will be determined on these analyt-containing samples (re-introduction of samples)