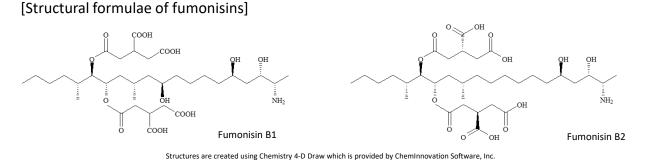
ST002 GL Sciences Inc.

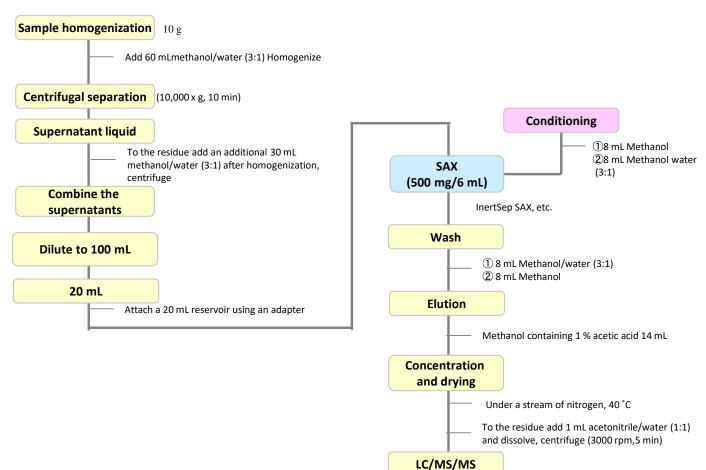
## **Analysis of Fumonisins in Cereals**

Fumonisins B1 and B2 are mycotoxins found in cereals and are typically analyzed using HPLC with fluorescence detection or LC/MS (/MS). Sample pretreatment, is commonly made using a strong anion exchange phase (SAX) because fumonisin has several carboxylic acids in its molecular structure. However, extraction with SAX alone may result in low recoveries for the samples with a high lipid content or a complex composition e.g.beer. These sample types also require pretreatment to remove lipids and other contaminants with non-polar phases such as C18 prior to treatment with the SAX phase. Two extraction methods are introduced in this application note , the first using SAX only, and the second using C18 and SAX in tandem.

## 1. Flow diagram of solid phase pretreatment



### [Example of pretreatment of samples such as corn with low lipid content]



Reference: Method 15 AOAC 995.

Feed Analysis Standards, Agriculture, Forestry and Fisheries Consumption Safety Technology Center Food Sanitation Magazine Vol.45,No.5,pp. 255-258(2004)



[Examples of Pretreatment of Contaminated Malt, Beer and Lipid-Rich Grains]

Sample Homogeniz	zation 10 g
	Add 15 mL of water and allow to stand for 15 minutes.
	Homogenize with the addition of methanol 45 mL
	(After 5 minutes of deaeration, Add 0.5 mL of 0.2 % ammonia-water and Add 10 mL of water, mix, and transfer to a mini column.
Centrifugal separa	ation (10,000 x g, 10 min)
Supernatant liqu	uid
	To the residue add an additional 30 mL of methanol/water (3:1), then homogenize and centrifuge
Combine the superr	natants
Dilute to 100 m	nL
20 mL	
	Attach a 20 mL reservoir with an adapter
C18 (500 mg)	InertSep LSC C 18, etc.
SAX (500 mg)	Used together
54X (500 mg)	InertSep SAX, etc.
Wash	
(	<ol> <li>10 mL Water</li> <li>10 mL of Methanol/0.2 % ammonia solution (3:1)</li> <li>Remove the C18 cartridge from the top of the SAX and attach a 6 mL reservoir</li> </ol>
SAX	
ЗАЛ	
Wash	
	① 5 mL of Methanol/water (3:1) ② 5 mL Methanol
Elution	
	Methanol containing 1% acetic acid 14 mL
Concentration and	d dry (Under a stream of nitrogen, 40 °C ).
	Fo the residue add acetonitrile/water (1:1) 1 mL Add and dissolve, centrifuge (3000 rpm, 5 min)
LC/MS/MS	
,,	

Reference: Method 15 AOAC 995.

Feed Analysis Standards, Agriculture, Forestry and Fisheries Consumption Safety Technology Center Food Sanitation Magazine Vol.45, No.5, pp. 255-258 (2004)

### 2. Products for solid-phase extraction

### [InertSep SAX]

[InertSep C18]

Mean particle

size

Carbon

End-caps Surface Area

Pore size

use

Pore volume

PH range of

Si-(CH<sub>2</sub>)17CH<sub>3</sub>

: 60 µm

: 19 %

: 450 m<sup>2</sup>/g

: 0.7 mL/g

: 60 Å

: 2-8

[Empty reservoir]

: Highly End-Capping

Si-(CH <sub>2</sub> ) <sub>3</sub> -N <sup>+</sup> -(CH <sub>3</sub> ) <sub>3</sub>				
Mean particle size Carbon Surface Area Pore volume Pore size Ion exchange capacity PKa PH range of use Remarks		45 μm 10 % 450 m²/g 0.7 mL/g 60 Å 0.7 meq/g (-) 2 - 8 OH - ion pair		

InertSep SAX is a solid phase in which a trimethylaminopropyl group is attached to silica gel. The primary interaction has a strong anion exchange action and, as a secondary interaction, a weak nonpolar interaction. It is commonly used to extract weak anionic substances such as carboxylic acids. Syringe barrel type cartridge

Produc	t name	Column size	Qty.	Cat.No.
InertSep SAX Recommendation for this study	200 mg / 3 mL	50 bottles	5010-61642	
		500 mg / 3 mL	50 bottles	5010-61643
		500 mg / 6 mL	30 bottles	5010-61644
		1 g / 6 mL	30 bottles	5010-61645
	2 g / 12 mL	20 bottles	5010-61646	

#### Luer device cartridge

Product name		Column size	Qty.	Cat.No.	
	InortCon Clim LCAV	Recommendation for this study	500 mg	50 bottles	5010-65640
	InertSep SlimJ SAX		1000 mg	50 bottles	5010-64641

InertSep C18 is a solid phase with non-polar interactions in which octadecyl groups are chemically bonded to silica gel. Advanced end-capping prevents cation-exchange interactions with silanol groups, resulting in reduced adsorption of basic compounds. It is suitable as a clean-up solid phase for removing lipids in the concurrent testing method for residual pesticides.

#### Large size cartridge LSC

Product name		Column size	Qty.	Cat.No.
InertSep LSC C18		100 mg	50 bottles	5010-63001
	Recommendation for this study	200 mg	50 bottles	5010-63002
	tor this study	500 mg	50 bottles	5010-63003

Product name		Specification	Qty.	Cat.No.
	Recommendation for this study	20 mL	20 bottles	5010-60104
Empty reservoir (PP) No frits		60 mL	10 bottles	5010-60105
		150 mL	10 bottles	5010-60106
Product name	Specification	Qty.	Cat.No.	
Solid-phase extraction cartridge Connection adapter (PP)	In this study Rinse	For LSC reservoir	12	5010-60004

GL Sciences disclaims any and all responsibility for any injury or damage which may be caused by this data directly or indirectly. We reserve the right to amend this information or data at any time and without any prior announcement.

GL Sciences, Inc. Japan 22-1 Nishishinjuku 6-Chome Shinjuku-ku, Tokyo, 163-1130, Japan Phone: +81-3-5323-6620 Fax: +81-3-5323-6621 Email: world@gls.co.jp Web: www.glsciences.com GL Sciences B.V. De Sleutel 9 5652 AS Eindhoven The Netherlands Phone: +31 (0)40 254 95 31 Email: info@glsciences.eu Web: www.glsciences.eu

### <u>GL Sciences (ShangHai) Ltd.</u>

Tower B, Room 2003, Far East International Plaza, NO,317 Xianxia Road, Changning District. Shanghai, China P.C. 200032 Phone: +86 (0)21-6278-2272 Email: <u>contact@glsciences.com.cn</u> Web: www.glsciences.com.cn <u>GL Sciences, Inc. USA</u>

4733 Torrance Blvd. Suite 255 Torrance, CA 90503 Phone: 310-265-4424 Fax: 310-265-4425 Email: info@glsciencesinc.com Web: www.glsciencesinc.com

International Distributors Visit our Website at www.glsciences.com/distributors

# G GL Sciences