Matrix of the Month

March 2018

Ochratoxin A in Umeboshi-Paste ~ Manual and Automated ~

Do you have a special matrix that we should test for mycotoxins? Please let us know and write an e-mail to: mycotoxins@LCTech.de

Sample Preparation

MYCOTOXINS

The Umeboshi

Umeboshi is an apricot variety from Japan with a special salty and sour taste. The plum is associated with the beginning of spring, because its blossoms are some of the first of the year. In and around Tokyo they blossom from February to March. For the traditional production of the dried fruits, they undergo a month-long lactic acid fermentation after harvesting in a brine of sea salt and shiso leaves, which gives them the beautiful red colour. Afterwards, they are stored in barrels in which they mature for 1 - 2 years. Beyond the dried variant, umeboshi is also often used as a paste. With its fruity-acidic and at the same time salty aroma, this is a refined seasoning for e.g. salad dressings, dips or vegetable dishes.

Immunoaffinity Columns OtaCLEAN for Clean-Up of Ochratoxin A

Cultivation and storage of food and animal feed may contribute to the spread of moulds, which produce mycotoxins, toxic secondary metabolites - also in umeboshi. The consumption of such contamined food or feed can lead to serious health damage in both humans and animals.

The immunoaffinity columns OtaCLEAN are designed for the clean-up of ochratoxin A in food and feed and achieve very good recovery rates even in difficult matrices. The columns possess a very high matrix tolerance and are able to bind ochratoxin A highly specific.

The OtaCLEAN columns are suitable for manual and automated processing e.g. with the LCTech robotic system FREESTYLE SPE. Another advantage of the OtaCLEAN column is its long shelf life of 24 months from the date of manufacture even when stored at room temperature without compromising high quality.

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Manual Processing Protocol

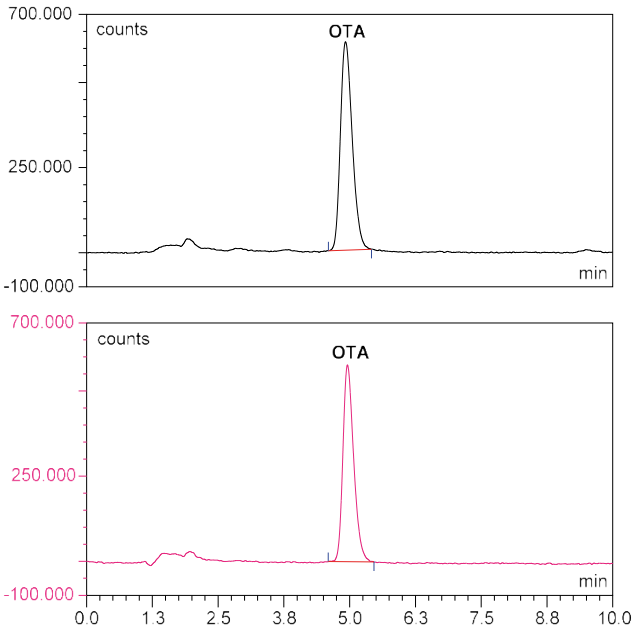
Homogenise 20 g of umeboshi-paste and add 2 g of sodium chloride. Extract the sample through 100 mL methanol/water (80/20 (v/v)) and 50 mL n-hexane in order to remove fat and essential oils. Continue the extraction for at least 10 minutes to ensure high extraction efficiencies. Filtrate the raw extract and dilute 2 mL of it with 12 mL PBS (contains 8 % Tween).

Load the sample with a maximum flow rate of 2 mL/min onto an immunoaffinity column OtaCLEAN. Wash the sample reservoir with 2 x 5 mL deionised water and load this solution onto the column.

Dry the column with a short air flush and elute it with 2 mL of methanol. Keep in mind that the column bed is incubated with methanol for 5 minutes in order to ensure a fully denaturation of the antibodies and release of toxins.

Dilute the eluate for HPLC conditions for the subsequent analysis via fluorescence or LC-MS.

Chromatogram



Black: 10 ppb standard OTA (4 ng/2 mL)
Red: Umeboshi-paste 10 ppb spiked

HPLC-Conditions
(Ochratoxin A)

Mycotoxin:	**Ochratoxin A**
HPLC:	isocratic
Column Oven:	40 °C
Separation Column:	RP EC 125/3 nucleosil 120-3 C18
Flow Rate:	0.6 mL/min
Eluent:	HPLC-water/methanol/ acetonitrile + 1 % acetic acid (60/30/15 (v/v/v))
Fluorescence Detection:	without derivatization
Excitation Wavelength:	335 nm
Emission Wavelength:	465 nm

Recovery Rates
Content of OtaCLEAN in Umeboshi-Paste

Mycotoxin	**Ochratoxin A**
Standard*	100
Recovery Rate Umeboshi-Paste, 10 ppb**	85

*Standard is set = 100 %, **Corrected with non-spiked sample /
The results comply with the performance specifications of EC 401/2006 (Section 4.3.1)

Would you like it a little faster?

You can process umeboshi-paste even faster and cheaper. With only 3 cm small OtaCLEAN SMART columns, the manual processing time can be significantly reduced compared to the 3 mL column. In addition, more than 80 % of solvents can be saved.

Read more on our webseite: www.LCTech-online.com

These LCTech products were used:

OtaCLEAN, Immunoaffinity Column
for Ochratoxin A
P/N 10515 / 11535

FREESTYLE SPE, Robotic System
for Automated Sample Preparation
P/N 12663 / 12668

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