Determination of Acrylamide in Food

1. Range of Application

It is suitable for the determination acrylamide in food (coffee was used in this experiment)

2. Preparation of Solution

Weigh 5mg (accurate to 0.02mg) standard substance in a 50mL volumetric flask, dissolve with methanol and add volume to the scale. This solution, 1.0mL equivalent to 0.10 mg acrylamide, is used as the standard acrylamide reserve solution at a concentration of 100 g/mL. Accurately extract 1 ml standard reserve solution at 100 g/mL. Add volume to 10mL with 20% methanol water at a concentration of 10 g/mL.

3. Steps for Extraction

Weigh 1g sample in a 15mL of centrifuge tube, then add 10mL acetonitrile. Vortex for 2min and centrifuge for 1min (4000R /min). Transfer the supernatant to a 50mL centrifuge tube, add 10mL acetonitrile into centrifuge tube and extract again. Combine two extracts and add 20mL n-hexane , shake violently for 5min. After removing the upper layer of n-hexane, add 20mL of n-hexane added and shake violently for 5min to remove the n-hexane.
Transfer the subnatant to the flask, add 4mL of water and mix well, then steam to less than 2mL by decompression spin to be purified.

4. Steps for SPE Purification

SPE column：Welchrom® C18E Specification：500 mg/6mL

Activation：5mL methanol，5mL water

Sample loading：after packing all the purification liquid, collect the effluent.

Elution：with 2mL 30% methanol, rinse the flask for several times. Then load sample again, collect and drain

Combine the sample loading solution and eluent, then add it to 5mL with 30% methanol solution. Filter through 0.22μm membrane for HPLC detection.

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5. Precautions

Eluentpart：the eluent was changed from the original water to 10%, 20%, 30%, 40% and 50% methanol solution respectively. It was found that 30% methanol solution had better elution capacity.

6. Chromatographic Condition

Column：Welch Ultisil® XB-C18 4.6×150mm,3μm

Mobile phase：methanol：water(20:80)

Column temperature：35℃

Injection volume：5μL

Wavelength：210nm

Flow rate：0.5mL/min

7. Chromatogram or Result of Spike Recovery

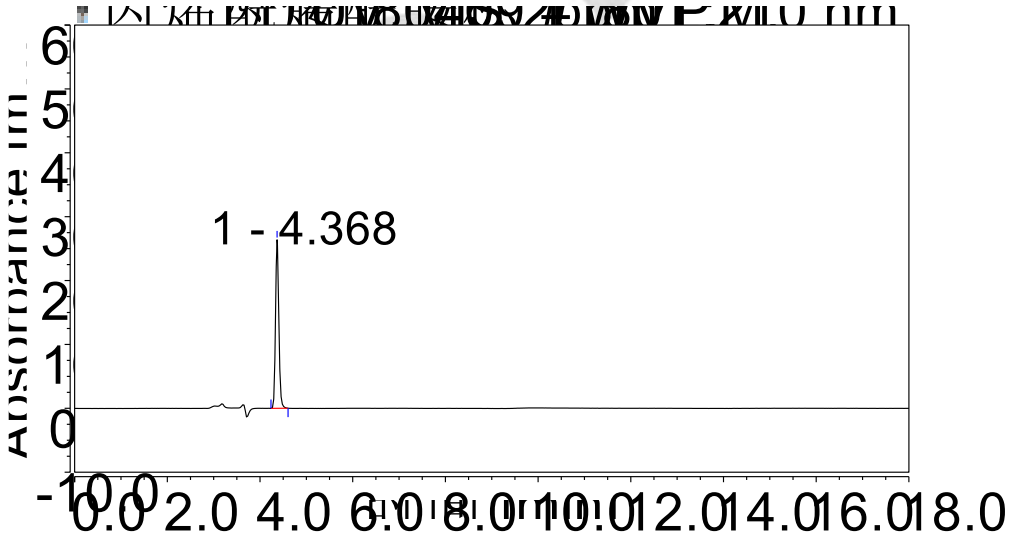

Fig. 1：Chromatogram of reference acrylamide at 2mg/L

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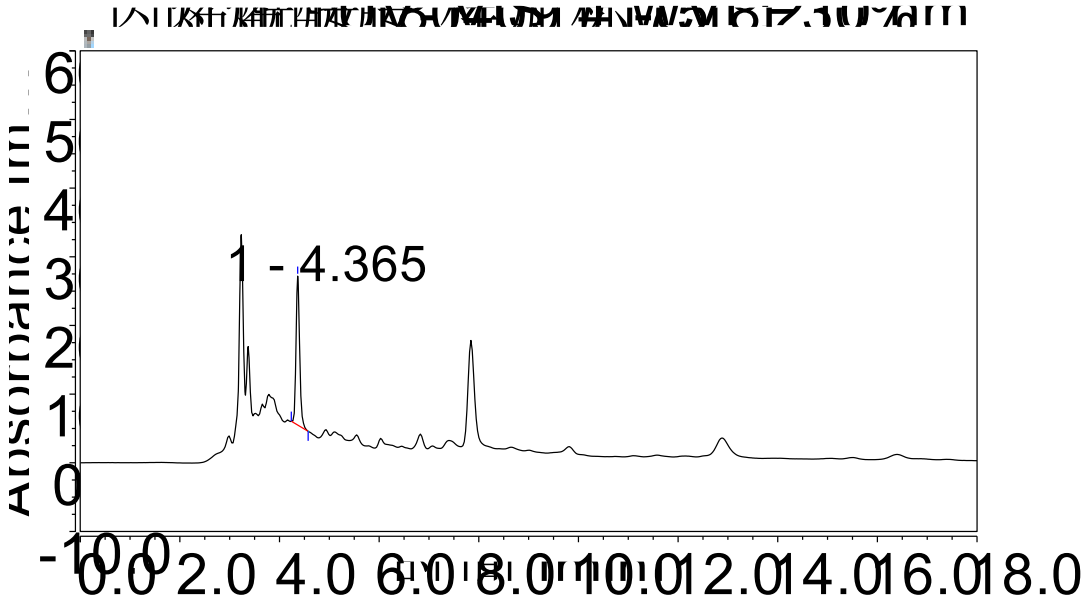

Fig. 2：Chromatogram of coffee sample at10mg/kg

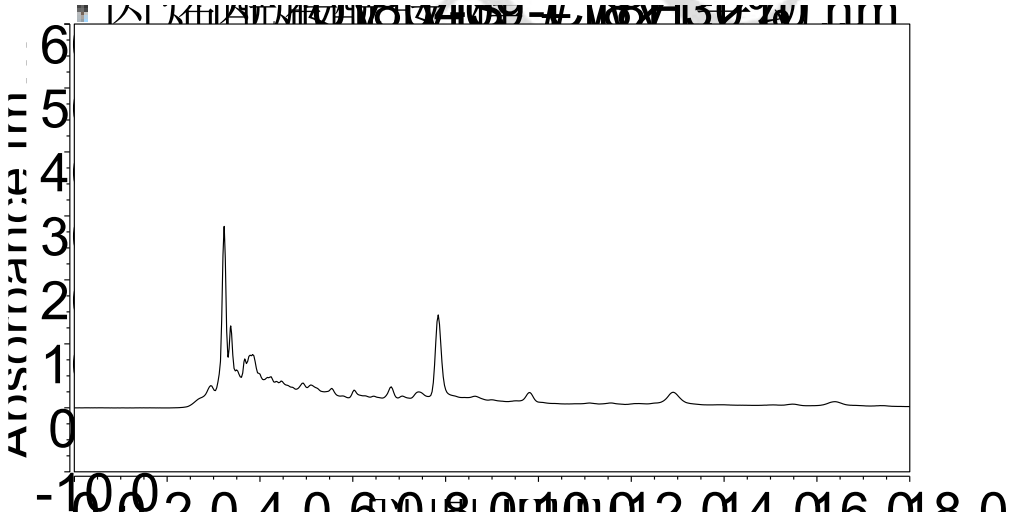

Fig.3：Chromatogram of coffee sample

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Tab. 1：Spike Recovery Rate

Name	Spike(mg/kg)	Recovery Rate(%)	Rt(min)	RSD(%)
Acrylamide	10	84	4.36	3.77
	10	84		
	10	84		
	10	86		
	10	83		
	10	82		
	10	87		

8. Ordering Information

P/N	Product	Specification
00559-11006	Welchrom® C18E	500mg/6ml, 30pk
00824-31001	Welch SPE instrument	12 ports square cylinder
00802-02201	Syringe filter, Nylon	13*0.22 100pk
00824-11101	Disposable injector	200 pcs/pk with the needle, rubber 1ml
00822-00007	Sample vial set	Sample vial set：2ml wide opening short screw-thread vial with write-on spot, clear, pre-slit white PTFE/red Silicone septa, 9mm blue short screw-thread polypropylene cap, 6mm centre hole, 100/pk
00201-21041	Ultisil® XB-C18	4.6×150mm, 3μm

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