ZA3000

Analysis of Cd in Brown Rice (Flame Method)

INTRODUCTION : Following the change to the ingredient specification for cadmium in rice by the Codex Alimentarius, the specification standard for cadmium in brown rice and polished rice based on Japanese Food Sanitation Act has been specified as not more than 0.4 mg/kg. The data shown here was obtained in the analysis performed on the hydrochloric acid extract of "NIES CRM No.10 Rice Flour-Unpolished" by the flame method. ZA3000 series employ the polarized zeeman correction method to correct background even for the flame method. It provides good baseline stability and thus, 0.4 mg/kg of cadmium in brown rice can be sufficiently analyzed. The analysis value obtained was within the range of the certified value, indicating that the procedures from the preparation to the measurement were performed accurately.

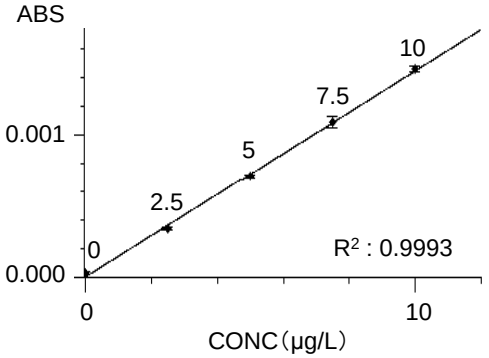
INSTRUMENT CONDITIONS

Element	: Cd	Atomizer	: STD Burner	Meas. Mode	: Working Curve
Instrument	: ZA3000	Flame	: Air-C_2H_2	Signal Mode	: BKG Corrected
Atomization	: Flame	Fuel (C_2H_2)	: 1.8 L/min	Curve Order	: Linear
Wavelength	: 228.8 nm	Oxidant (Air)	: 160 kPa	Calculation	: Integration
Lamp Current	: 5.0 mA		15.0 L/min	Time Constant	: 5.0 sec
Slit Width	: 1.3 nm	Burner Height	: 7.5 mm	Calculation Time	: 5.0 sec
				Delay Time	: 6 sec

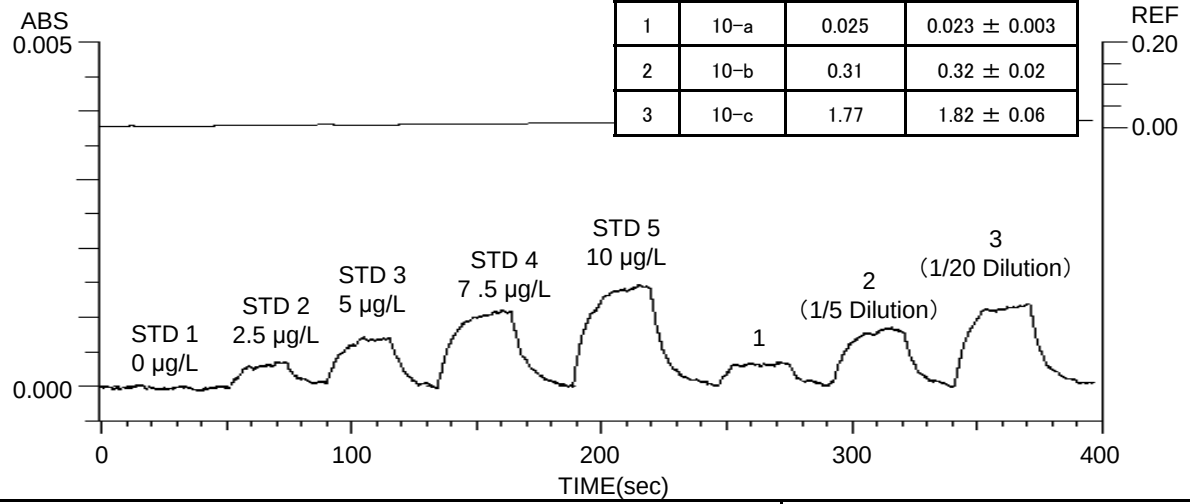
MEASUREMENT PARAMETERS

NOTE : Sample : NIES CRM No.10 Rice Flour-Unpolished
2 g of the sample was weighed and the solution prepared by 1-hour shaking with 20 mL of 1 mol/L hydrochloric acid for extraction was used for the measurement.

	CONC (μg/L)	Mean ABS	SD	RSD	REF
STD 1	0.000	0.00003	0.00001	33.33 %	0.00254
STD 2	2.500	0.00034	0.00001	2.94 %	0.00441
STD 3	5.000	0.00071	0.00001	1.41 %	0.00626
STD 4	7.500	0.00109	0.00004	3.67 %	0.00823
STD 5	10.000	0.00146	0.00002	1.37 %	0.01025
1	2.465	0.00036	0.00000	0.00 %	0.01260
	2.465(μg/L) × 20(mL)/2(g)/1000 = 0.025 mg/kg				
2	6.205	0.00090	0.00004	4.44 %	0.01334
	6.205(μg/L) × 5 × 20(mL)/2(g)/1000 = 0.31 mg/kg				
3	8.837	0.00128	0.00003	2.34 %	0.01467
	8.837(μg/L) × 20 × 20(mL)/2(g)/1000 = 1.77 mg/kg				



No.	Sample	Analysis value (mg/kg)	Certified value (mg/kg)
1	10-a	0.025	0.023 ± 0.003
2	10-b	0.31	0.32 ± 0.02
3	10-c	1.77	1.82 ± 0.06



KEY WORDS

Bio/Medical Science/Food/Pharmaceutical, Food, Food Chemistry, Toxins in Food, Brown Rice, Cadmium, Cd, Flame, AA, ZA3000

Atomic Absorption Photometer (AA)

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