

Sheet No.

AQF FO 017E Materials

Determination of iodine in dried kelp

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Instruments : AQF-2100H System, HF-210, GA-210, ABC-210/ASC-240S

Method : Combustion-ion chromatography

Related standard :

It is important to know the iodine content in the sample for measuring its nutritional value.. Concentrations of fluorine, chlorine, bromine, iodine, and sulfur can be determined accurately by using a combustion ion chromatography (CIC) system combining an Automatic Quick Furnace Model AQF-2100H which safely combusts samples with an ion chromatograph.

Sample name	Iodine in dried kelp																																				
Sample status																																					
Measuring items	Iodine (I)																																				
Measurement principle	Sample is thermally decomposed in argon (Ar) atmosphere, then combusted in oxygen (O ₂) atmosphere. Halogens in the sample are converted to hydrogen halide and halogen gas and sulfur turns into sulfur oxide. These components are collected into absorbing solution and converted to halide ion and sulfate ion. The resulting solution is analyzed by injecting into an ion chromatograph (IC). Analyzing flow [Sample weighing]→[Combustion]→[Collection of combustion gas]→[IC analysis]																																				
Parameters	<div>1. AQF-2100H<div>Sample size : 30mg Sample boat : Ceramic sample boat, SXSMBS Additive : WO₃ Pyrolysis tube : Quartz tube filled with quartz wool Absorbent : Hydrogen peroxide + Hydrazine / water Mode : Constant volume mode Heater Temp. Inlet : 1000degC Outlet : 1100degC Gas flow Ar : 200 ml/min O₂ : 400 ml/min</div><div>GA-210 Absorbent volume : 10 ml Sampling loop : 100 ul Absorption tube : For 10 ml Water supply : 2 Ar flow for water supply : 100 ml/min</div><div>ABC-210/ASC-240S<table><tr><td></td><td></td><td>1st</td><td>2nd</td><td>3rd</td><td>4th</td><td>5th</td><td>End</td><td>Cool</td></tr><tr><td>Position</td><td>(mm)</td><td>100</td><td>160</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Time</td><td>(sec)</td><td>90</td><td>90</td><td></td><td></td><td></td><td>300</td><td>60</td></tr><tr><td>Speed</td><td>(mm/sec)</td><td>10</td><td>0.12</td><td></td><td></td><td></td><td>20</td><td>40</td></tr></table></div></div> <div>Ar Time 0 (sec) O₂ Time 300(sec)</div>			1st	2nd	3rd	4th	5th	End	Cool	Position	(mm)	100	160						Time	(sec)	90	90				300	60	Speed	(mm/sec)	10	0.12				20	40
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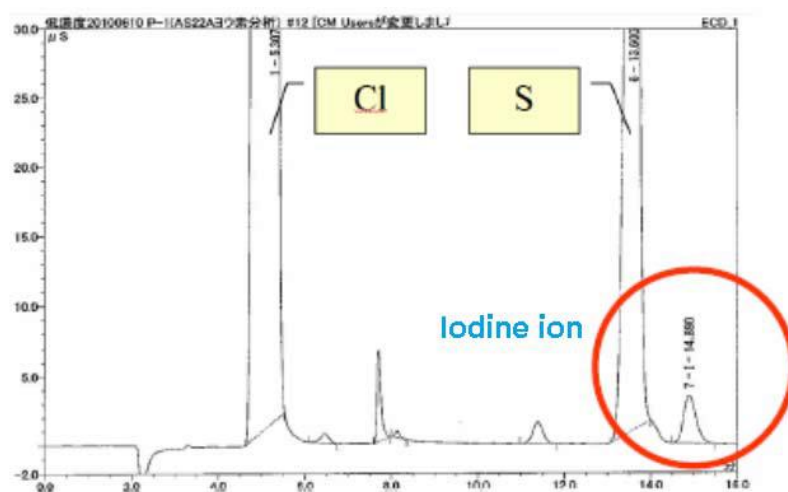
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2. Ion chromatograph

Ion chromatograph : DIONEX ICS-1500
 Column : DIONEX Ion Pack AG22
 Eluent : 4.5mM Na₂CO₃ / 1.5mM NaHCO₃
 Eluent flow : 1.50ml / min
 Detector : Conductivity
 Suppressor : ASRS-4-mm
 Measuring time : 15min
 Sampling loop : 100 ul using GA-210 sampling loop
 Calibration : F Cl Br S :0.1ppm to 5.0ppm

Results

Chromatogram



Result

Dried kelp	I (ppm)
1st	2878
2nd	2788
Average	2833

*Lower concentration of Iodide is detected in Chlorine and Sulfur rich sample without masking or any other pre-treatments.

Remarks

*Handling of reagents: Confirm labels and safety data sheets of reagents and handle them with enough care.
 *Automation is possible by using an Automatic Sample Changer, ASC-240S.
 When ASC-240S is used, the boat to be used will be a ceramic boat, TX3SCX.

*This application sheet is provided as reference, and does not assure the measurement results. Please consider analysis environment, external factors and sample nature for optimal conditions before the measurement.

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