

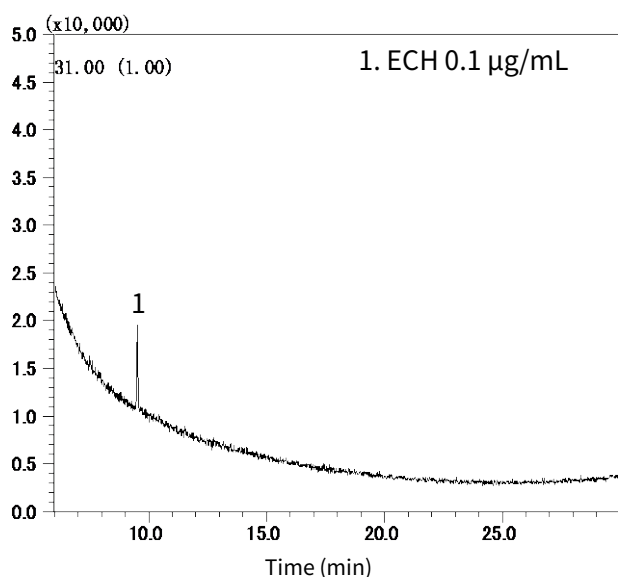
Analysis of Ethylene Chlorohydrin (2-chloroethanol) in Bamboo Setae

Ethylene chlorohydrin (2-chloroethanol, hereinafter abbreviated as ECH) is a reaction product of ethylene oxide, which is widely used for fumigating industrial raw materials and medical equipment.

ECH has been shown to be carcinogenic to humans, and there are safety concerns about residual ECH in skewer and chopsticks.

In this application, bamboo skewer were cut, extracted with ethanol, and measured with GC/MS. No ECH was detected, but some standard additives were measured.

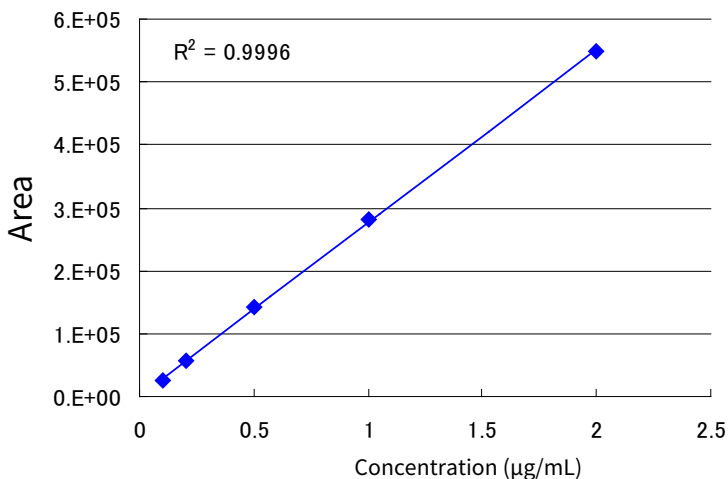
Example: measurement of standard



GC Conditions

System	: GC - MS
Column	: InertCap FFAP 0.25 mm I.D. x 30 m df = 0.25 µm
Col.Temp.	: 60 °C (1 min) - 5 °C/min - 220 °C (7 min)
Carrier Gas	: He 60 kPa
Injection	: Splitless (1 min) Vent flow 35.0 mL/min 200 °C
Detection	: MS Scan (m/z : 30 - 450) Interface Temp. 220 °C
Sample Size	: 0.1 µg/mL in Ethanol 1 µL

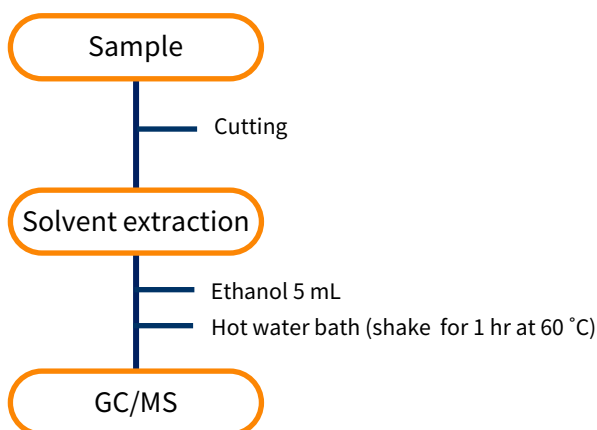
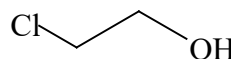
ECH (m/z 31) calibration curve



Repeated measurements of 0.1 µg/mL (m/z 31)

	Area
1 st	25123
2 nd	23866
3 rd	24918
4 th	24347
5 th	25507
Ave.	24752
STD	649
RSD (%)	2.62

Preliminary processing procedure

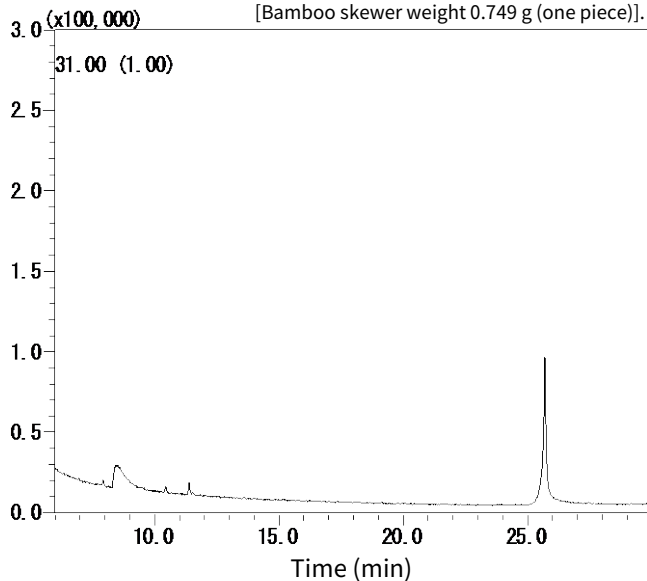

Structural Formula
 Ethylene chlorohydrin (ECH)


Structures created using Chemistry 4-D Draw which is provided by ChemInnovation Software, Inc.

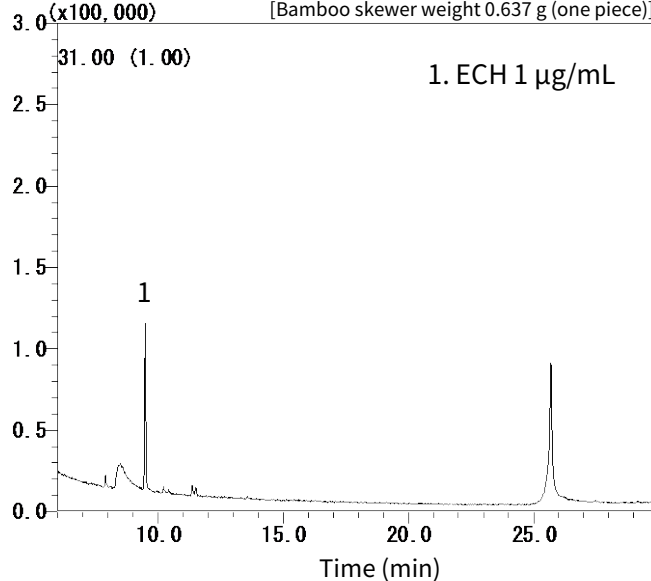
Example: Measurement of samples

Bamboo skewer extract

[Bamboo skewer weight 0.749 g (one piece)].

**Bamboo skewer extract + ECH (1 µg/mL)**

[Bamboo skewer weight 0.637 g (one piece)].



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