

Chromaster

Analysis of Catechins

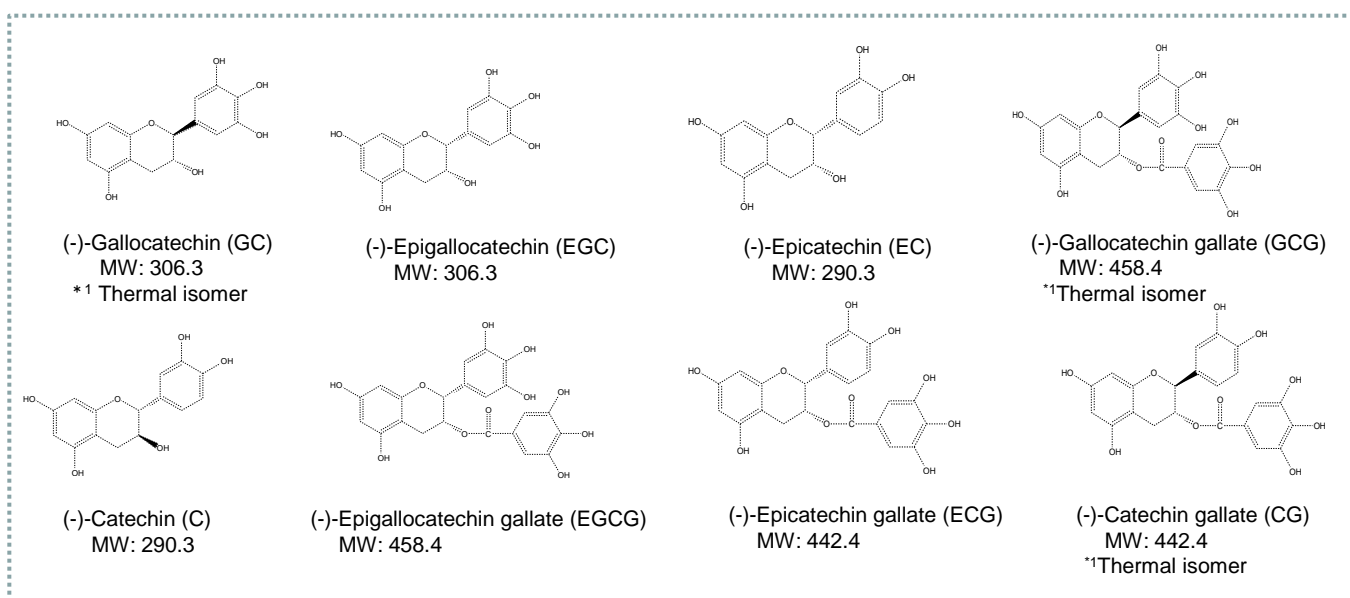
Catechins, the main ingredients of tea, have a wide variety of effects and benefits, and their functions have been attracting attention. Green tea and oolong tea are known as functional foods, and products with increased catechins are marketed as foods for specified health uses.

Unlike tea traditionally brewed with a teapot, commercial PET bottled green tea drinks include thermal isomers^{*1} formed during the pasteurization process in non-negligible concentrations, in addition to catechins derived from tea leaves. The physiological effects of these thermal isomers have been attracting attention. There is a wide variety of catechin effects and benefits, including cancer and mutation prevention, anti-tumor, antioxidant, and antibacterial effects, as well as lowering of blood cholesterol and elimination of active oxygen. Due to those effects and benefits, research on tea catechins has been actively conducted.

The following describes examples of analysis of catechins, including caffeine.

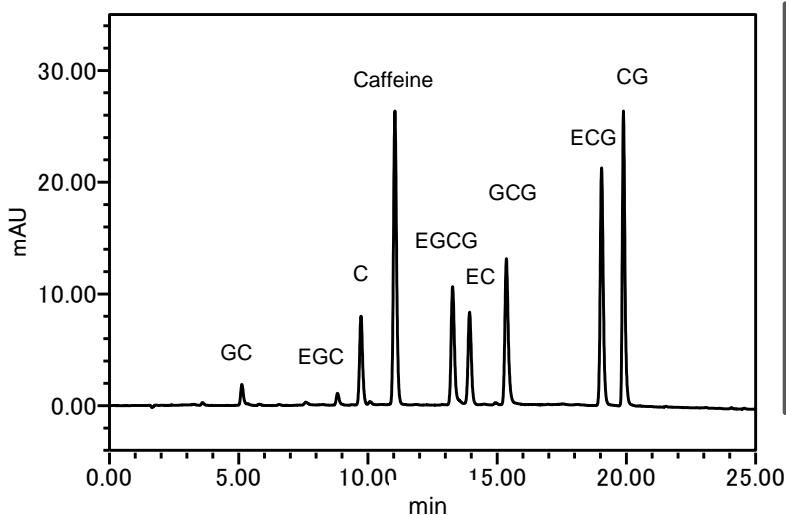
◆ Analysis of Catechins ◆

■ Samples: Catechin standard samples



■ Analysis results of standard samples

[LC conditions]



Chromatogram of standard samples (Concentration of each: 10 mg/L)

Column	HITACHI LaChrom C18 (5 μm) 4.6 mm I.D. x 150 mm
Eluent	(A) 0.05 % H ₃ PO ₄ (pH 2.4) (B) CH ₃ OH/CH ₃ CN=3/2 *Gradient: (0 min)B10% → (15 min)B25% → (25 min)B60% → (25.1-40 min)B10%
Flow rate	1.0 mL/min
Column temperature	40 °C
Detection	UV 280 nm
Injection volume	10 μL

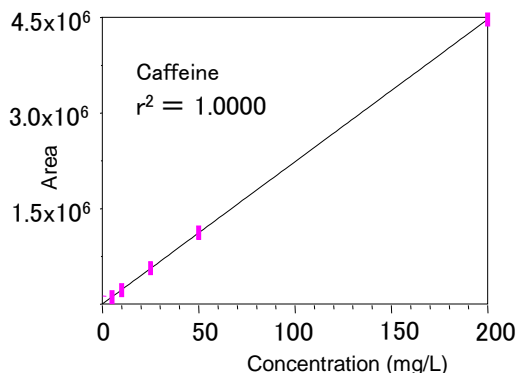
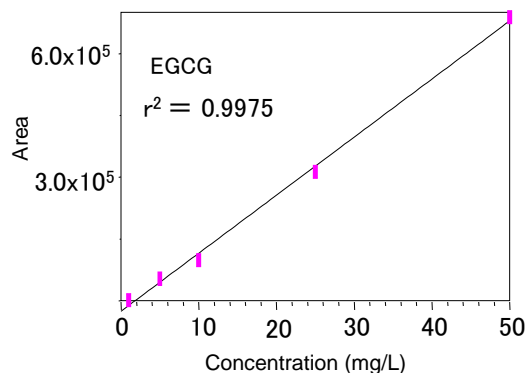
[System configuration]

5110 Pump
5210 AutoSampler
5310 Column Oven
5420 UV-VIS Detector
Empower2 Data Processing System

Analysis of Catechin

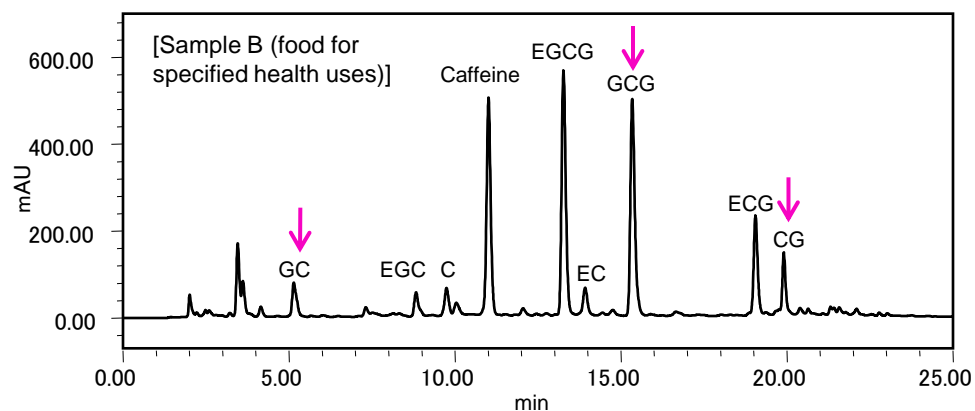
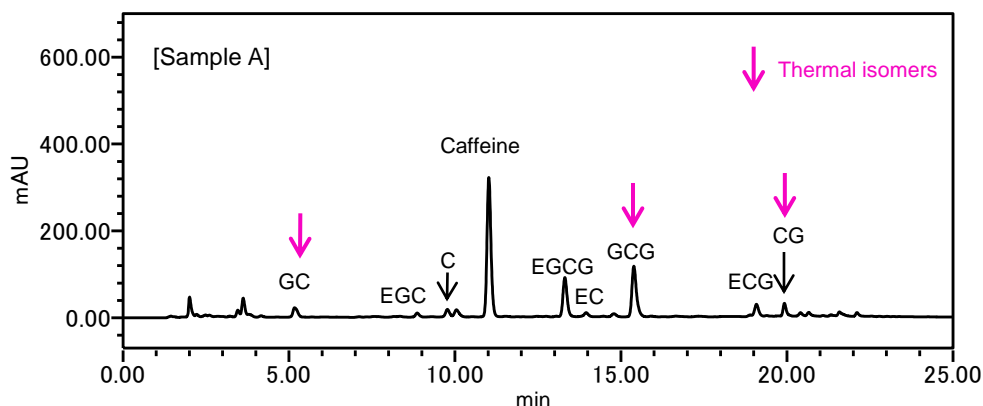
Linearity

Linear standard curves have been obtained in the concentration range of 1-50 mg/L ((-)- epigallocatechin: 5-50 mg/L, caffeine: 1-200 mg/L).



Sample analysis example: Commercial PET bottled green tea

Sample pretreatment method : analysis after filtration through 0.45 μm filters



The following were detected in Samples A and B : 4 types of catechins, including (-)-epigallocatechin gallate (EGCG), (-)-epigallocatechin (EGC), (-)-epicatechin gallate (ECG), and (-)-epicatechin (EC), as well as thermal isomers, including (-)-gallocatechin (GC), (-)-Gallocatechin gallate (GCG), and (-)-Catechin gallate (CG).

Note that the simultaneous analysis of the caffeine contained in tea can be performed under these analysis conditions.

NOTE: These data are an example of measurement; the individual values cannot be guaranteed.

The system is for research use only, and is not intended for any animal or human therapeutic or diagnostic use..