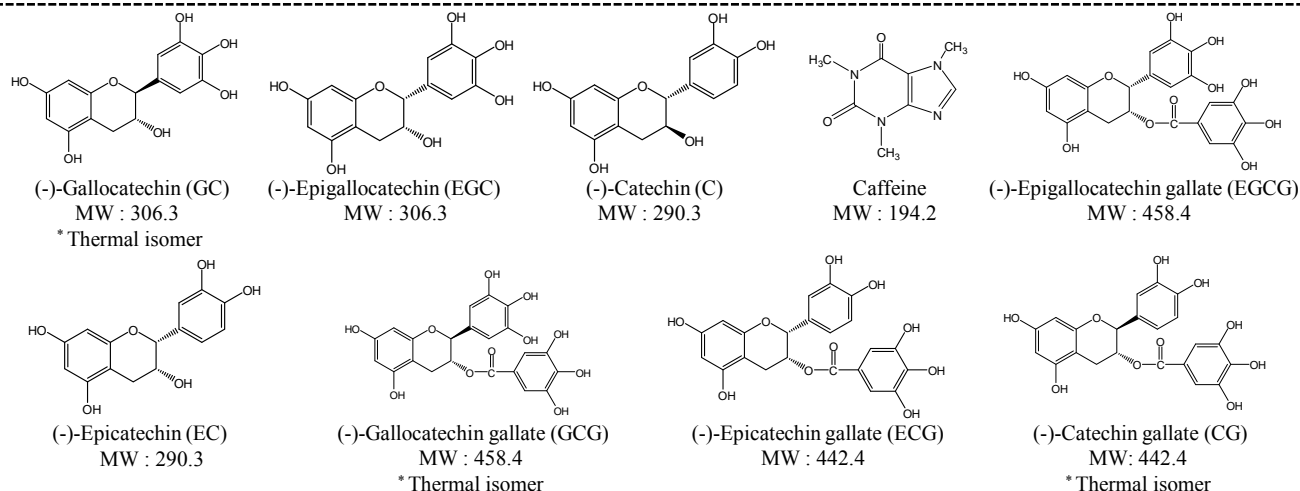




Analysis of Catechins

Catechins are important antioxidant components found in tea. Due to their antioxidant properties and wide range of efficacy, research of catechins has been receiving an increasing amount of attention. The catechin profile in tea has been found to differ depending on the method of tea preparation. In addition, the catechins in tea form thermal isomers during the sterilization process of commercially available bottled tea drinks. The concentration of thermal isomers reaches significant levels, and, as such, the physiological function of these isomers is also of interest. The following describes examples of analysis of catechins and caffeine in tea.

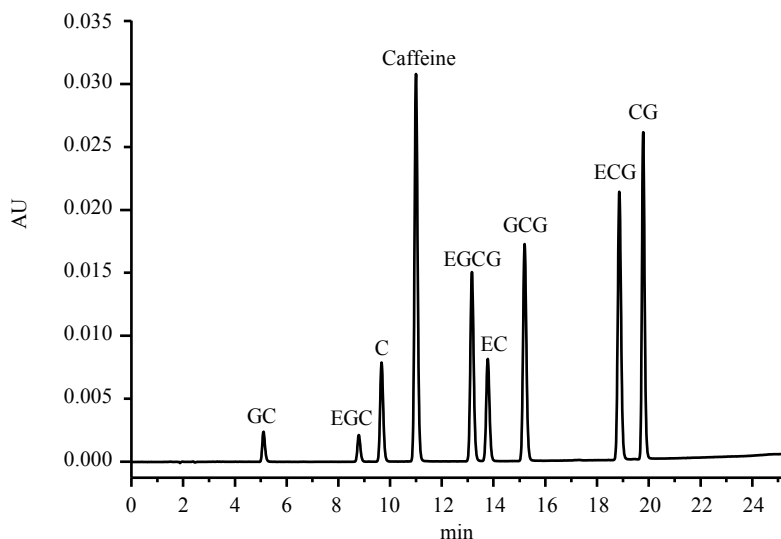
Standard samples and structural formulas



[Preparation of standard samples]

Each standard reagent of component was weighed, dissolved in methanol, and diluted with mobile phase A. (0.05 % H₃PO₄ (v/v)).

Analysis result of standard samples



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

[Analytical conditions]

Column : HITACHI LaChrom C18 (5 μm)
4.6 mm I.D. × 150 mm
Eluent : (A) 0.05 (v/v) % H₃PO₄ *
(B) CH₃OH / CH₃CN = 3 / 2
*Gradient:
(0 min) B 10 % → (15 min) B 25 % →
(25 min) B 60 % → (25.1 - 40 min) B 10 %
Flow rate : 1.0 mL/min
Column temp. : 40 °C
Detection : UV 280 nm
Injection vol. : 10 μL
(* Purity = 85 %)

Linearity

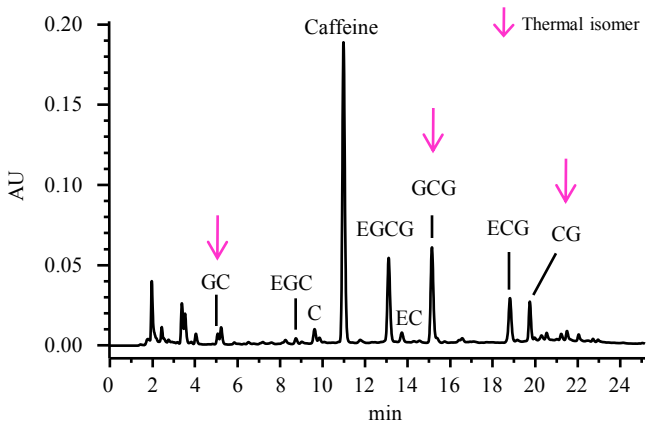
Linear calibration curves have been obtained (defined as $r^2 \geq 0.999$) with the following concentration ranges :
GC (0.5 ~ 50 mg/L), EGC (0.5 ~ 50 mg/L), C (0.1 ~ 50 mg/L), Caffeine (0.1 ~ 200 mg/L), EGCG (0.1 ~ 50 mg/L),
EC (0.1 ~ 50 mg/L), GCG (0.1 ~ 50 mg/L), ECG (0.1 ~ 50 mg/L), CG (0.1 ~ 50 mg/L)



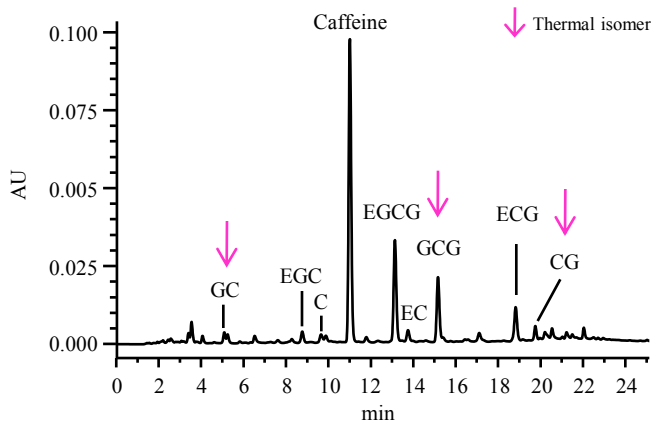
Analysis of Catechins

Analysis of example samples

[Pet bottle drink samples]



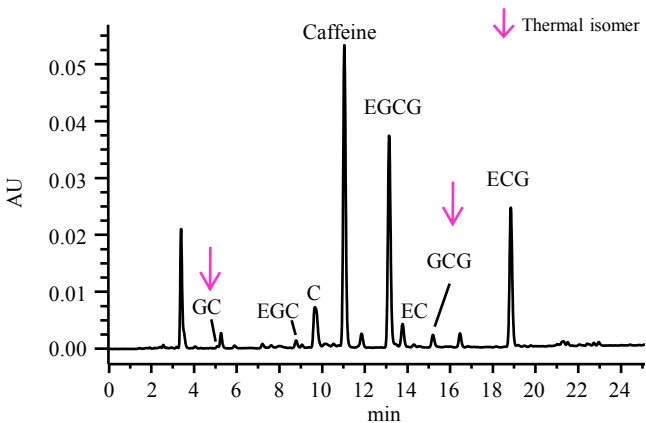
(A) Jasmine tea drinks



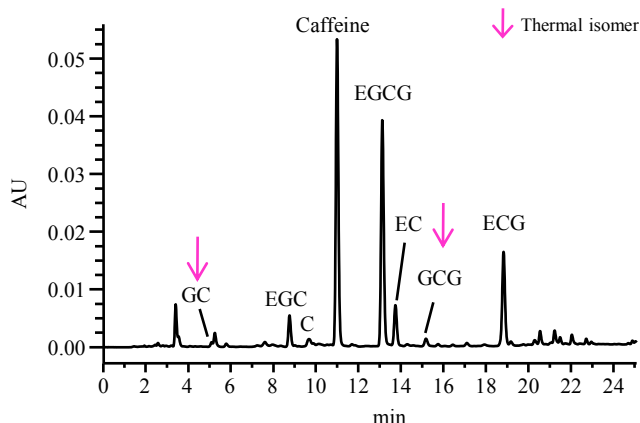
(B) Oolong tea drinks

[Preparation of drink samples] 2-fold dilution → filtered with 0.45 μm filter → injection

[Brewed tea samples]

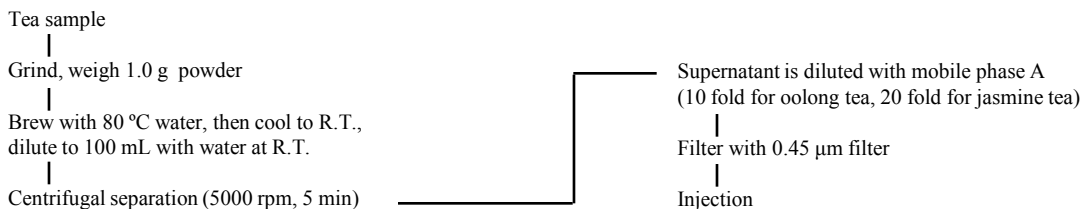


(C) Jasmine tea



(D) Oolong tea

[Preparation of tea samples]



The important components in tea drinks (catechins, catechin thermal isomers, and caffeine) are measured by this procedure.

System configuration : Primaide 1110 Pump, 1210 Auto sampler, 1310 Column Oven, 1410 UV

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.