

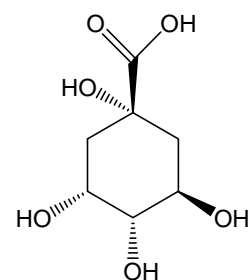
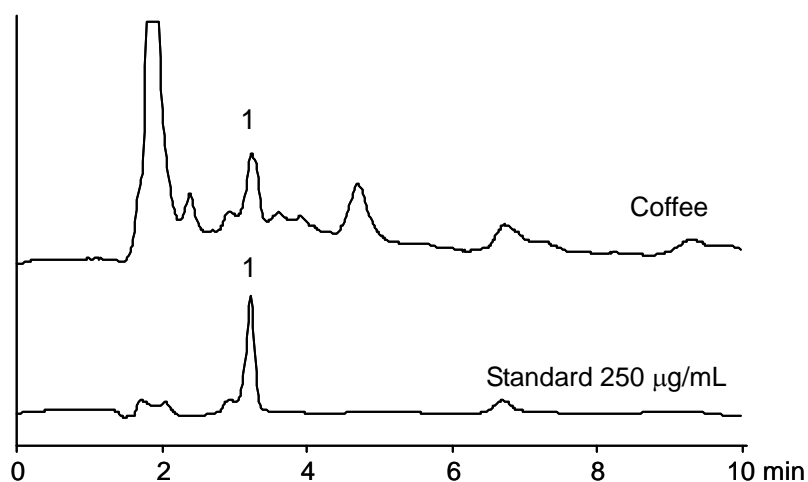
キナ酸

Quinic acid

キナ酸はクランベリーの実やコーヒーの種子に多く含まれる低級脂肪酸です。尿を弱酸性に保持する作用があるため、膀胱炎や尿路感染症の予防効果があるとされる物質です。親水性が極めて高く逆相系の分析では十分な保持が得られませんが、NH₂カラムの弱アニオン交換作用を利用することで保持が可能となります。実試料として缶コーヒーに簡易な前処理を施し分析した結果を示します。

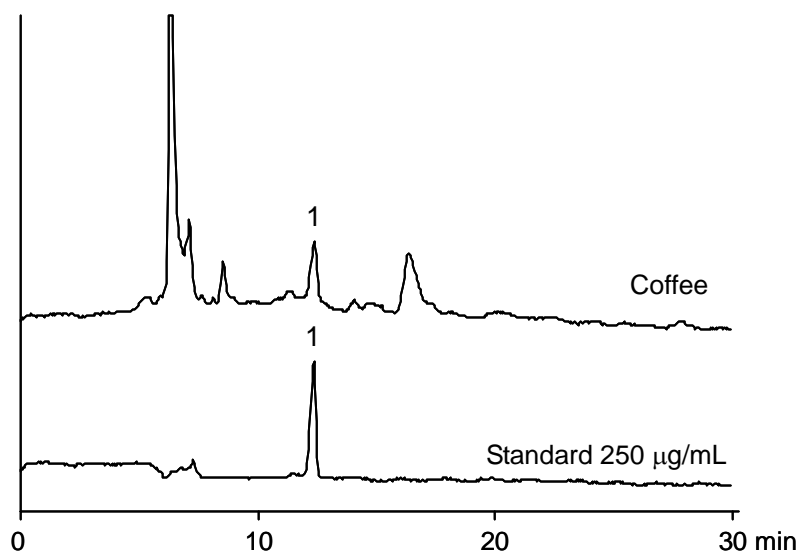
Quinic acid, a lower fatty acid, is contained in cranberry and coffee beans. It keeps urine weakly acidic, and prevents an urinary passage from infective disease. While it is highly hydrophilic and hardly retained in a reversed-phase column, quinic acid could be separated well with a NH₂ column based on weak anion-exchange chromatography. The following results were obtained after a simple pretreatment on coffee.

【HPLC Conditions 1】



1. キナ酸
Quinic acid (M.W. 192.2)

【HPLC Conditions 2】



【HPLC Conditions 1】

Column : CAPCELL PAK NH₂ UG80 S5 ; 2.0 mm i.d. x 150 mm
Mobile phase : 10 mmol/L Phosphate buffer (KH₂PO₄ : Na₂HPO₄ = 1 : 1 in molar ratio) / CH₃OH = 98 / 2
Flow rate : 200 μL/min
Temperature : 40 °C
Detection : PDA 210 nm
Inj. vol. : 2 μL
Sample dissolved in : Standard was dissolved in mobile phase.
Ammonium hydroxide solution was added to coffee to make it at pH 9. A 0.5-mL portion of the treated coffee and 0.5 mL of chloroform were placed in a 1-mL vial. The resultant liquid was vigorously mixed and centrifuged. The chloroform layer was discarded. The addition and extraction with chloroform was repeated three times. The cleaned water layer was passed through a 0.45-μm filter and ten-fold diluted with the mobile phase.

【HPLC Conditions 2】

Column : CAPCELL PAK NH₂ UG80 S5 ; 2.0 mm i.d. x 250 mm
(Two columns connected in series)
Mobile phase : 10 mmol/L Phosphate buffer (KH₂PO₄ : Na₂HPO₄ = 1 : 1 in molar ratio) / CH₃OH = 98 / 2
Flow rate : 160 μL/min
Temperature : 40 °C
Detection : PDA 210 nm
Inj. vol. : 2 μL
Sample dissolved in : Sample prepared according to the same procedure as that in Conditions 1.
※ 1 μg/mL = 1 ppm