

Chromaster

- Analysis of steroid drugs -

Drugs that contain a steroid skeleton include Prednisolone, Betamethasone, Dexamethasone, and Hydrocortisone, and each possesses a different duration of action and strength. Steroid drugs providing powerful anti-inflammatory and immune suppression actions are used in the treatment of various illnesses, including allergy and inflammation ailments. However, when administered continuously, steroid drugs can potentially trigger a variety of side-effects, such as obesity, high blood pressure, and diabetes. In view of this fact, when using steroids, treatment methods are needed that minimize side-effects through the proper adjustment of dosage, as well as methods of administration in a manner that is appropriate for a given disease. The text below describes analyses that were performed on two types of off-the-shelf ointments.

Analysis of steroid drugs

Samples: Commercially available ointments A and B

[Sample preparation]

Ointment A: 0.5 g in 80 mL
methanol



Sonicate: 55 Hz, 20 min.,
Dilute to 100 mL with
methanol



Centrifuge: 3,000 rpm, 10 min.



Filter: Pore Size 0.45 μm



Inject sample

Ointment B: 0.2 g in 80 mL
methanol



Sonicate: 55 Hz, 20 min.,
Dilute to 100 mL with
methanol



Centrifuge: 3,000 rpm, 10 min.



Filter: Pore Size 0.45 μm



Inject sample

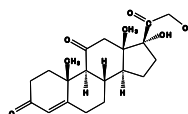
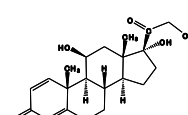
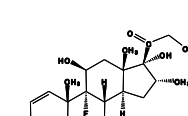
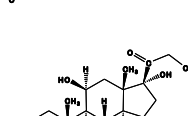
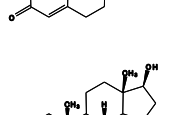
[System configuration]

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

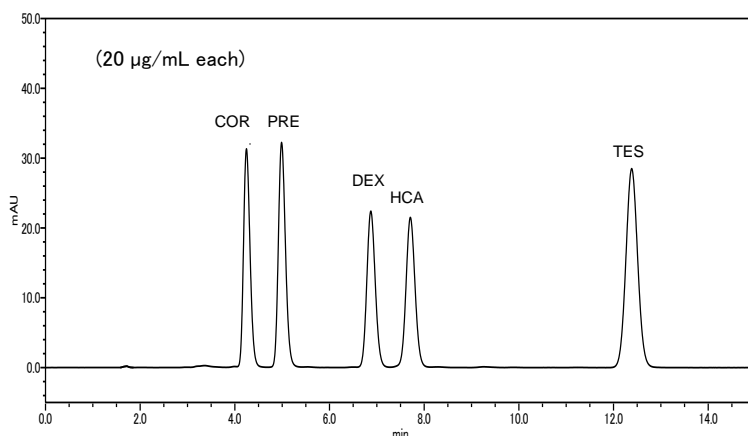
[LC conditions]

Column	: HITACHI LaChrom C18 (5 μm) 4.6 mm I.D. × 150 mm
Eluent	: H ₂ O/MeOH = 40/60(V/V)
Flow rate	: 1.0 mL/min
Temperature	: 40°C
Detection	: 254 nm
Inj.vol	: 10 μL

[Standard samples]

Cortisone (COR)		(MW) 360.40
Prednisolone (PRE)		360.40
Dexamethasone (DEX)		392.47
Hydrocortisone Acetate (HCA)		405.50
Testosterone (TES)		288.42

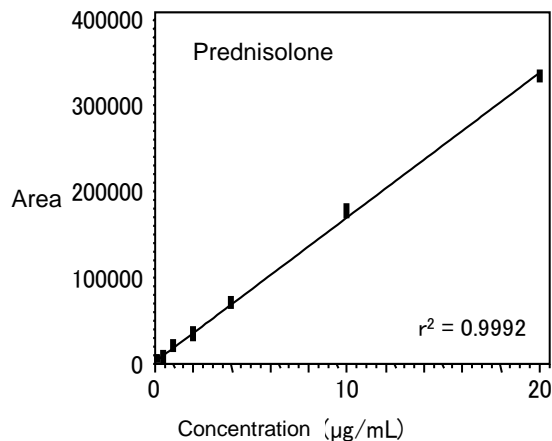
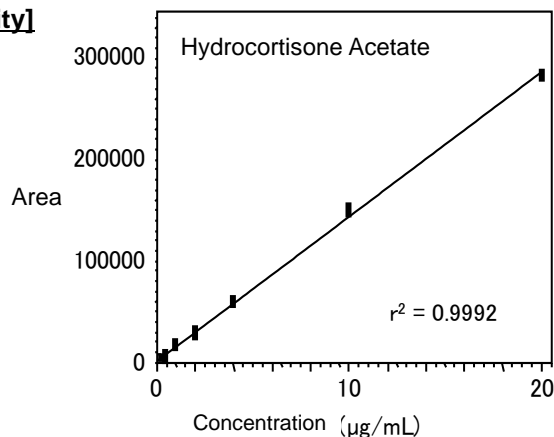
[Results of standard sample assaying]



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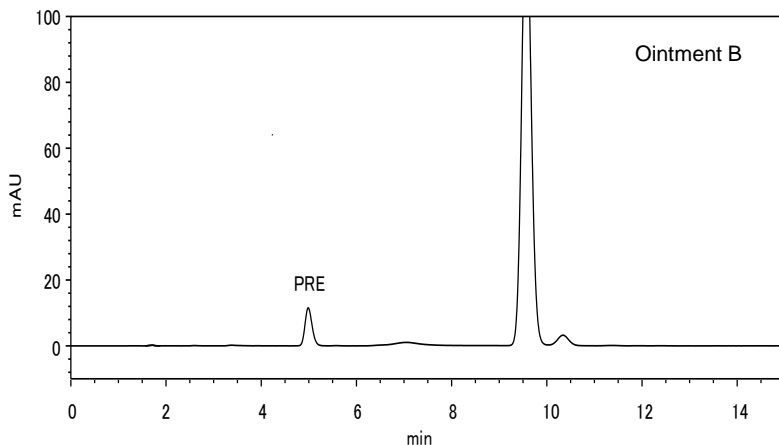
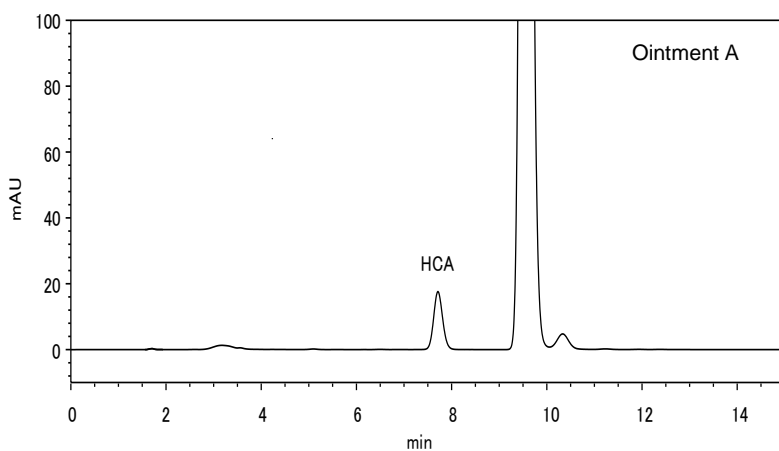
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[Linearity]



[Range of calibration: 0.1 to 20 $\mu\text{g/mL}$]

[Results of analysis]



[LC conditions]

Column : HITACHI LaChrom C18 (5 μm)
 4.6 mm I.D. \times 150 mm
 Eluent : $\text{H}_2\text{O}/\text{MeOH} = 40/60(\text{V/V})$
 Flow rate : 1.0 mL/min
 Temperature : 40 $^\circ\text{C}$
 Detection : 254 nm
 Inj.vol : 10 μL

As a result of analyzing two off-the-shelf ointments, hydrocortisone acetate was detected in Ointment A, and Prednisolone in Ointment B.

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

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