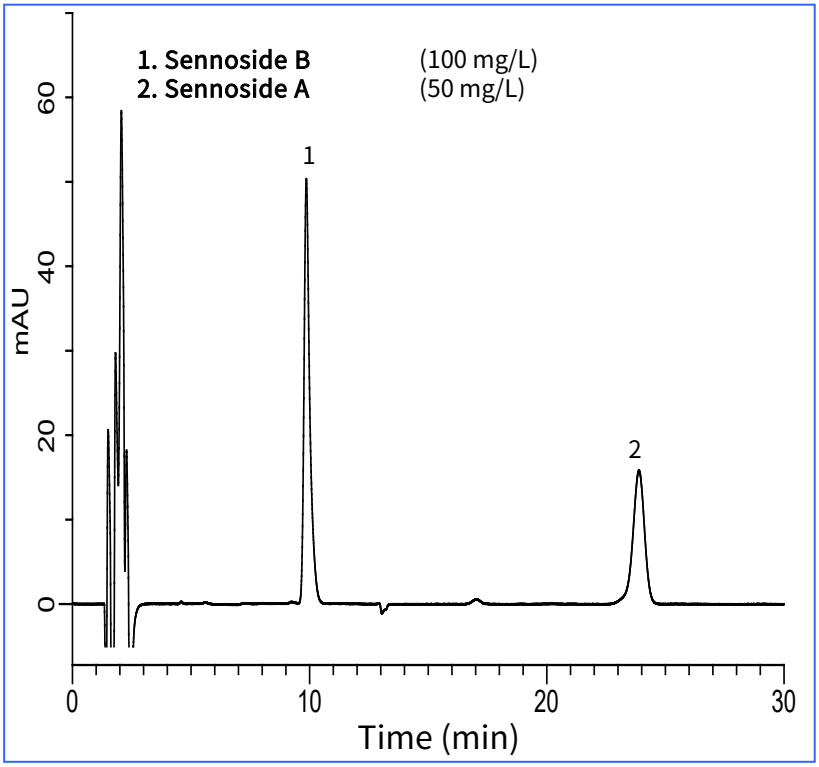
Analysis of Sennosides in Senna in Accordance with the Japanese Pharmacopoeia

Senna contain total sennosides (sennoside A and sennoside B), making up more than 1.0 % of the dry weight of crude drugs. The Japanese Pharmacopoeia Law, 15th Edition, requires an HPLC method for the assay and the system conformity items listed below are defined.

In this study, Senna was analyzed using a HPLC system with an Inertsil ODS-4 column using the following conditions and conformed to the system suitability test defined below..

(K. Kanno)

Example: measurement of standards



HPLC conditions

Column : Inertsil ODS-4 (5 µm, 150 x 4.6 mm I.D.)

Eluent : A) CH_3CN
B) Acetate buffer *
1 L of a mixture of A/B = 8/17 (v/v)
bromide Tetra-*n*-heptylammonium
Dissolve 2.45 g of m

Flow rate : 0.8 mL/min.

Column temperature : 50 ˚C

Detected : UV 340 nm

Injection volume : 10 µL

* 100 mM sodium acetate, adjusted to pH 5.0 with glacial acetic acid

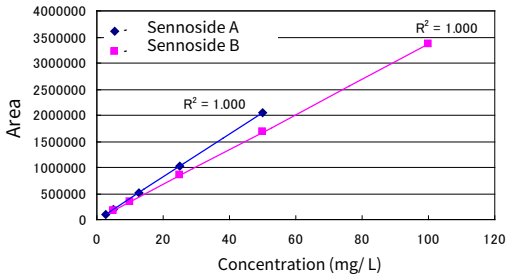


Figure 1 Calibration curve of sennoside.

Requirements of the system suitability test

When analyzed under the above HPLC conditions,

1. Sennoside B and sennoside A are eluted in this order.
2. The resolution is 15 or greater.
3. The number of theoretical plates for sennoside A is not less than 8000.
4. The Relative standard deviation of the area value for the sennoside A peak when the analysis was repeated six times was not more than 1.5 %.

Results

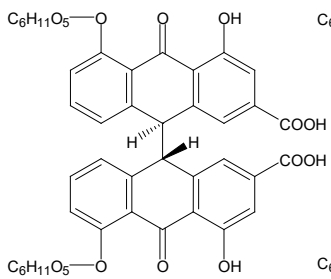
1. Elution order: Satisfies the provisions
2. Resolution: 21.8
3. Number of theoretical plates: 11800
4. Relative standard deviation: 1.06 % (Table 1)

*See Technical Note No. 38.

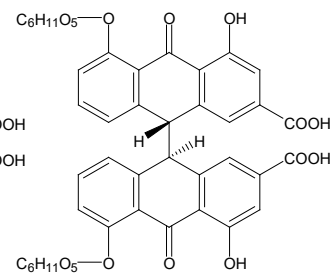
Table 1. Area value and retention time of sennoside

	Area		RT (min)	
	Sennoside A	SennosideB	Sennoside A	SennosideB
1	2052022	3363820	23.8	9.8
2	2072734	3378712	23.8	9.8
3	2085026	3366048	23.8	9.8
4	2105586	3369100	23.9	9.9
5	2107927	3365150	23.9	9.9
6	2112802	3371409	23.8	9.9
Average	2089350	3369040	23.8	9.9
RSD (%)	1.14	0.16	0.20	0.24

Structural formula



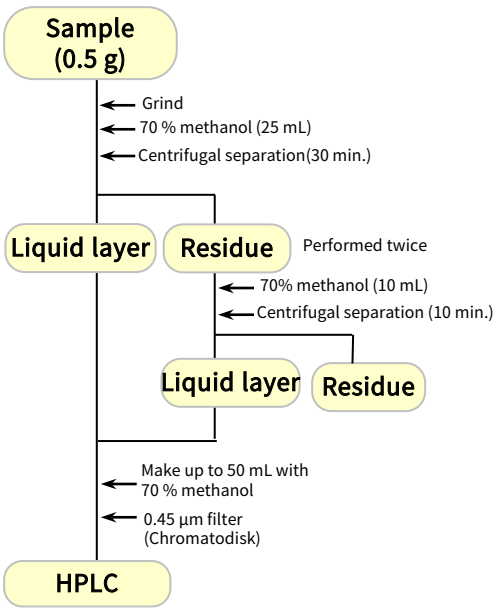
1. Sennoside B

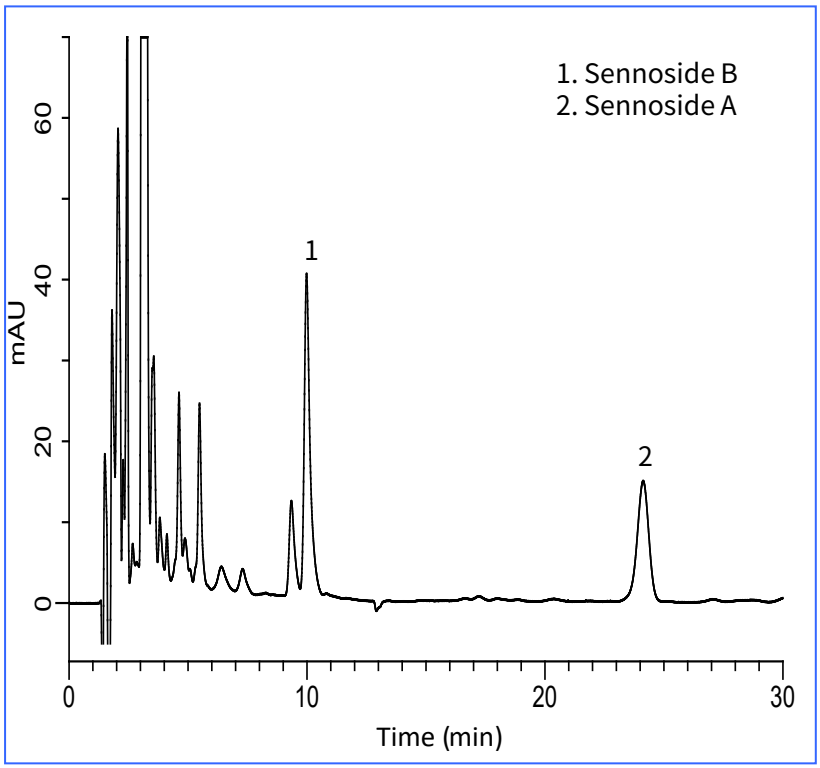


2. Sennoside A

Analysis of commercial senna powder

Example of pretreatment





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