Application Note

510003H

Analysis of Capsaicin and Dihydrocapsaicin in Capsicum

Introduction

The pungent components contained in the Capsicum are collectively referred to as the Capsaicinoid. Especially, the Capsaicin and Dihydrocapsaicin in Capsicum constitute 80 – 90% of the pungent components, and are now used in the medical products and healthy food. In addition it is known that the Capsaicinoid content depends on the part of the Capsicum.

In this experiment, the Capsaicinoid content of Pericarp, Seed and Placenta each of the 4 kinds of the Capsicum such as the Capsicum frutescens, Finger hot and Habanero was measured and analyzed.

Experimental

Equipment		Conditions	
Pump:	PU-2089	Column:	CrestPak C18S (4.6 mmID x 150 mmL, 5 mm)
Column oven:	CO-2065	Eluent A:	1% Acetic acid/Acetonitrile (50/50)
Autosampler:	AS-2057	Eluent B:	Acetonitrile
Detector:	MD-2018	Gradient condition:	(A/B), 0 min (100/0) → 15 min (100/0) → 15.05 min (0/100) → 20.00 min (0/100) → 20.05 min (100/0) 1 cycle; 35.5 min
		Flow rate:	1.0 mL/min
		Column temp.:	40ºC
		Wavelength:	280 nm
		Injection volume:	20 mL
		Standard sample:	Capsaicin 10, 50, 100 mg/mL in Methanol Dihydrocapsaicin 10, 50, 100 µg/mL in Methanol

Result

The chromatograms of the 10 µg/mL each of Capsaicin and Dihydrocapsaicin standard sample are shown in Fig. 1. Good separation was obtained within 12 minutes. The sampling procedure of the actual samples is shown in Fig. 2.

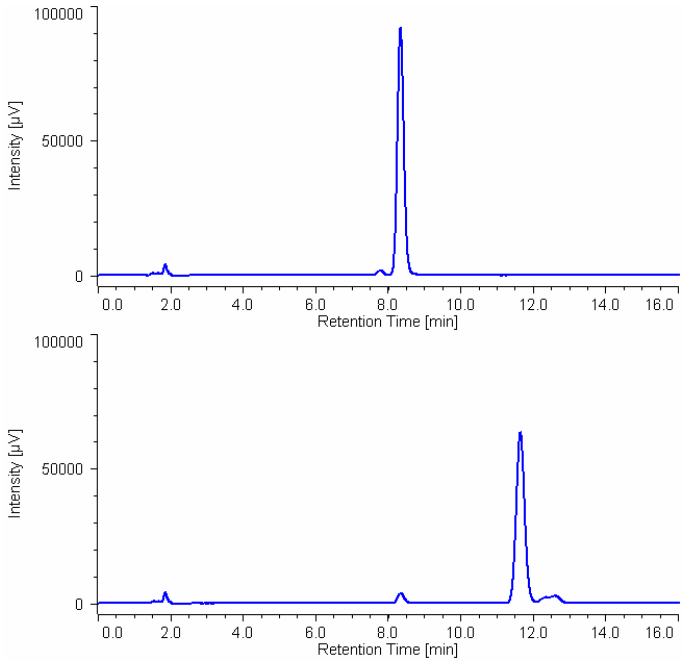

Fig. 1 Chromatogram of Capsaicin and Dihydrocapsaicin standard sample
1: Capsaicin, 2: Dihydrocapsaicin 2µg each

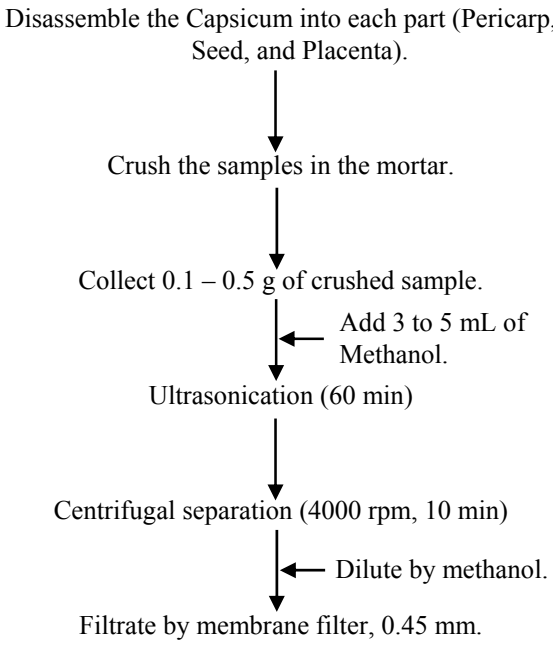

Fig. 2 Prepation of the sample

JASCO INTERNATIONAL CO., LTD
4-21, Sennin-cho 2-chome, Hachioji, Tokyo 193-0835, Japan
Tel: +81-42-666-1322, Fax: +81-42-665-6512

The chromatograms for each 4 kinds of Capsicum are shown in Fig. 3. In Table 1 the Capsaicin and Dihydrocapsaicin content in the each Capsicum sample (wet weight) are shown. It is known that the contents are very different depending on each part and for the all capsicum, Placenta part contains Capsaicin and Dihydrocapsaicin the most .

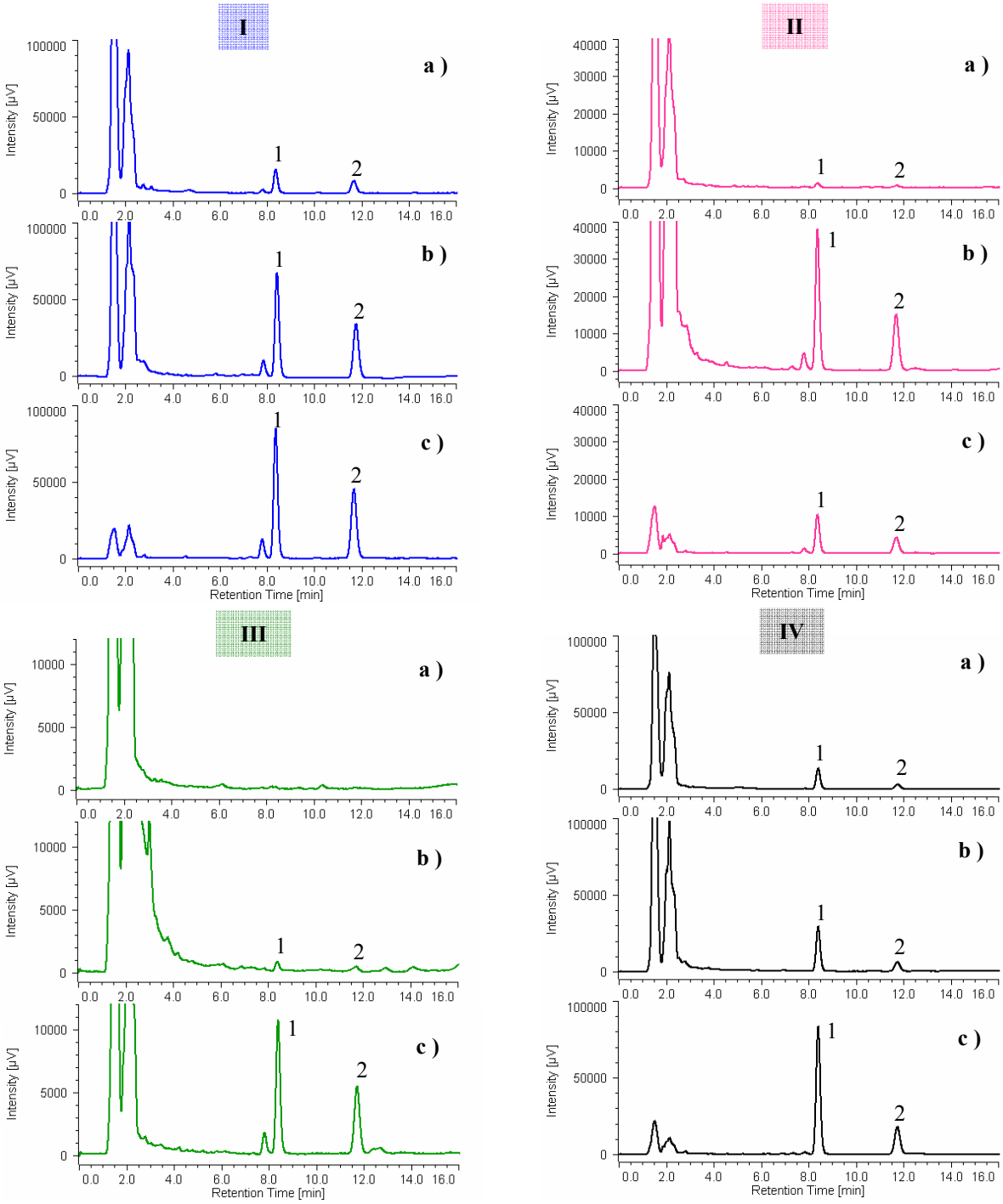

Fig. 3 Chromatograms for each part (Pericarp, Seed and Placenta) of capsicum
I Capsicum frutescens, II Serrano, III Finger hot, IV Habanero
a) Pericarp, b) Seed, c) Placenta
1: Capsaicin, 2: Dihydrocapsaicin

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Table 1 Capsaicin and Dihydrocapsaicin content in each part of the Capsicum

Sample	contents in each sample [µg/g]	
	Capsaicin	Dihydrocapsaicin
Capsicum frutescens		
Pericarp	154	120
Seed	713	542
Placenta	9540	7410
Serrano		
Pericarp	7.64	4.47
Seed	387	229
Placenta	1080	644
Finger hot		
Pericarp	N.D.	N.D.
Seed	2.89	2.87
Placenta	217	160
Habanero		
Pericarp	134	43.2
Seed	297	92.5
Placenta	8720	2750

N.D. : Not detected

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