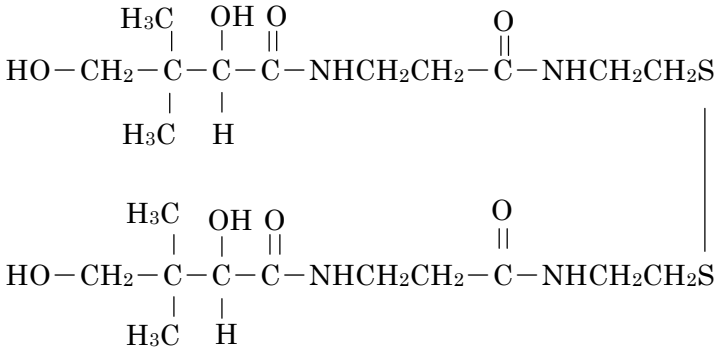
AQUACOUNTER Application Sheet	COM series	DATA No. B8	1st edition
Pharmaceuticals	Measurement of pantethine purity		

1. Measurement outline

The method for quantifying pantethine is stipulated in Japanese Pharmacopoeia (13th revision). In this quantification method, bromine solution is added to the sample to react with the sample for a fixed period and then excessive bromine is allowed to react with potassium iodide for titration of the free iodine with sodium thiosulfate. This section introduces an example of measurement in which the sample was titrated directly with bromine titrant as a reference method of Japanese Pharmacopoeia.

0.5g of sample was weighed and added with 75mL (1→2) sulfuric acid and then was heated to 40 – 50ºC to add 1mL indigocarmine indicator for titration with 0.1mol/L bromine titrant. The end point was detected by detecting the point of color change for the indicator using the measurement unit for photometric titration.



Pantethine
$C_{22}H_{42}N_4O_8S_2$

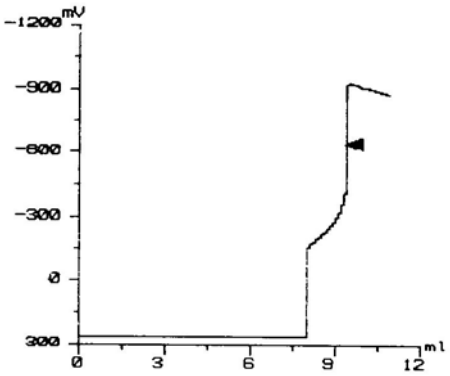
2. Reagents and electrodes

(1) Reagents	Titrant	0.1mol/L bromine titrant
	Buffer	75mL (1→2) sulfuric acid used
	Indicator	1mL indigocarmine indicator
(2) Electrodes	Photometric probe with 530nm filter	

3. Measurement conditions example (for COM-1600M w/ Photometric unit)

Master File 1 **Condition 1** (for BLANK)				**Condition 2** (for measurement)			
Method	AUTO			Method	AUTO		
Amp No.	2	Mode No.	21	Amp No.	2	Mode No.	22
Buret No.	1	Pre Int	0 sec	BURET No.	1	Pre Int	0 sec
Meas Unit	mV	Del K	0	Meas Unit	mV	Del K	0
S-Timer	40 sec	Del Sens	0 mV	S-Timer	40 sec	Del Sens	0 mV
CP mL	0 mL	Int Time	6 sec	CP mL	8.0 mL	Int Time	10 sec
Direction	N/A	Int Sens	3 mV	Direction	N/A	Int Sens	3 mV
DP mL	0 mL	Brt Speed	2	DP mL	0 mL	Brt Speed	2
End Sens	1000	Pulse	8	End Sens	1000	Pulse	80
Over mL	0.3 mL			Over mL	1.0 mL		
Max volume	1 mL			Max Volume	15 mL		
Unit	mL			Unit	%		
Size	0 g			Size	-- g		
Blank	0 mL			Blank	BLANK result value		
Factor	0			Factor	Titer of the titrant		
Molarity	0			Molarity	0.1 mol/L		
K	0			K	554.72		
L	0			L	0		
Formula	D			Formula	(D-B)×K×F×M/(S×10)		

4. Measurement example



Sample measurement results

Sample No.	Sample volume (g)	Titration value (mL)	Content (%)
1	0.5050	9.343	102.36
2	0.5010	9.247	102.11
3	0.5049	9.344	102.39
	Avg.		102.29 %
	Std. Dev.		0.15 %
	C.V.		0.15 %

5. Outline

(1) In this measurement, the method of successively dropping the titrant until titration was near the end point was adopted to shorten the measurement period (successive dropping mL – CP mL).

(2) Though the measurement result slightly exceeded 100%, favorable repeatability was obtained. This method has the feature of relatively simple measurement operation compared to that of Japanese Pharmacopoeia.

Key words

Medical product, pantethine, photometric titration, indigocarmine indicator, bromine titrant, oxidation-reduction titration

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