Category	*Potentiometric titration series COM series*
Food & Beverage	**Acidity and vitamin C in citrus juice** By acid/base and redox titrations

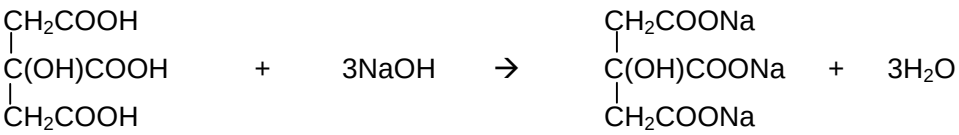
Referenced methods

Key words; vitamin C, fruit juice, refreshing drink, acid/base, redox

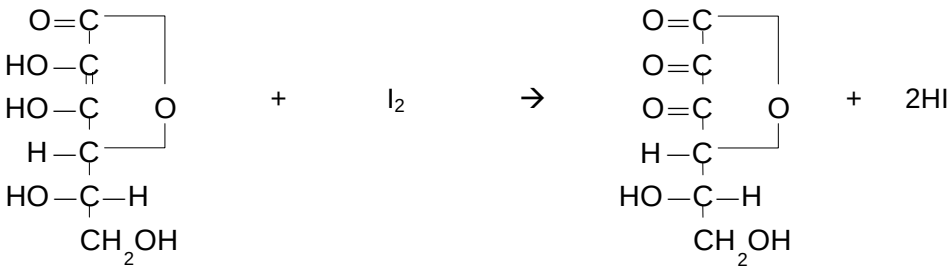
Outline

Acidity and vitamin C in refreshing drinks are titrated successively to quantify each component.

(1) First, citric acid in the sample is titrated with sodium hydroxide using glass/reference combination electrode.



(2) When titration of citric acid is completed, acetic acid is added to acidify the sample. The indicator electrode is switched to platinum electrode automatically and vitamin C is titrated with iodine.



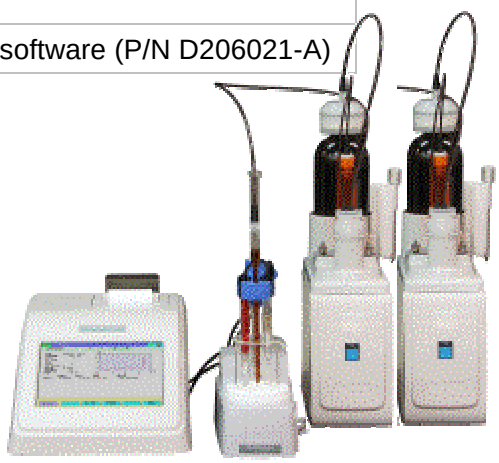
Reagents

Titrant	:	0.1mol/L sodium hydroxide *for acidity 0.1mol/L iodine (I_2) *for vitamin C
Buffer	:	10% acetic acid *for vitamin C

Instruments and Electrodes

Recommended automatic titrator	**COM-1700S + Additional Buret B-1700-20**
・**GR-501B** Glass-reference electrode (P/N D252331-1)	
・**PT-301** Platinum electrode (P/N D231244-A)	
More option for flexible data handling on PC! ・Titra-Net Viewer software (P/N D206021-A)	

View and edit data on your PC!

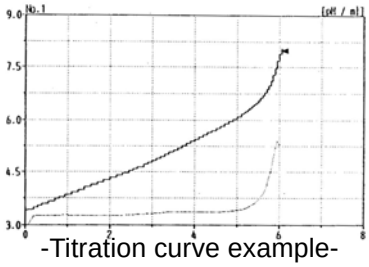


COM-1700S (built-in printer)

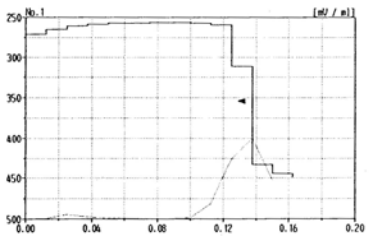
Condition parameters

Condition 1 (for Acidity)				**Condition 2** (for Vitamin C)			
Method	SET			Method	AUTO		
Buret No.	1	Mode No.	5	Buret No.	1	Mode No.	9
Amp. No.	1	Pre Int	0 sec	Amp No.	2	Pre Int	0 sec
Meas Unit	pH	Del K	5	Meas Unit	mV	Del K	0
S-Timer	10 sec	Del Sens	0 mV	S-Timer	10 sec	Del Sens	0 mV
CP pH	-	Int Time	3 sec	CP pH	-	Int Time	5 sec
T-Timer	-	Int Sens	3 mV	T-Timer	-	Int Sens	3 mV
Direction	UP	Brt Speed	2	Direction	-	Brt Speed	2
DP pH	-	Pulse	40	DP pH	-	Pulse	40
End pH	8.00 pH			End Sens	300		
Over mL	0 mL			Over mL	0 mL		
Max volume	20 mL			Max Volume	20 mL		
Unit	%			Unit	%		
Size	5 g			Size	5 g		
Blank	0			Blank	0		
Factor	Titre of the titrant			Factor	Titre of the titrant		
Molarity	0.1			Molarity	0.1		
K	64.040 (as citric acid)			K	88.6 (as ascorbic acid)		
L	-			L	-		
Formula	(D-B) x K x F x M / S x 10			Formula	(D-B) x K x F x M / S x 10		

Example results



-Titration curve example-
Acidity



Vitamin C

In this method, two different components are analyzed successively using two types of indicator electrodes and titrants. While this method used iodine titration method for determining vitamin C, there is an alternative method called “indophenol method”. It must be noted that indophenol method may be specified depending on the type of samples.

For more information, please feel free to contact:

Hiranuma Sangyo Co., Ltd.

1739 Motoyoshida-cho, Mito, Ibaraki 310-0836 JAPAN

Phone: +81-29-247-7343 / Fax: +81-29-247-0381

URL http://www.hiranuma.com E-mail info@hiranuma.com

ISO 9001
ISO 13485 Certified

ISO 14001 Certified