TARTARIC ACID

170 ml

INTENDED USE

Reagent for colorimetric determination of tartaric acid in foodstuff and other sample material.

PRINCIPLE OF THE METHOD

Tartaric acid reacts with vanadic acid at low pH, leading to the formation of a coloured complex, in concentration proportional to the amount of tartaric acid in the sample.

KIT COMPONENTS

The components of the kit are stable until expiration date on the label.
Keep away from direct light sources.

TART R1: **1 x 136 ml (liquid) blue cap**
Composition: Buffer pH 2.5

TART R2: **1 x 34 ml (liquid) red cap**
Composition: Ammonium metavanadate ≤ 1%

TART BL: **2 x 85 ml (liquid) white cap**
Composition: Buffer pH 2.5

Store all components at 2-8°C.

In vitro use only.

MATERIALS REQUIRED BUT NOT SUPPLIED

Current laboratory instrumentation. Spectrophotometer UV/VIS with thermostatic cuvette holder. Automatic micropipettes. Glass or high quality polystyrene cuvettes.
Tartaric acid standard 5 g/l (code SQPE054994) is available on request. Please contact customer service for further information.

REAGENT PREPARATION

Procedure 1:
Use separate reagents.
Stability: until expiration date on the label at 2-8°C.

Procedure 2:
Working reagent: mix 4 parts of reagent R1 with 1 part of reagent R2.
It is suggested to prepare strictly the amount needed for the analysis, and any residue has to be stored at 2-8°C away from direct light sources.
Analytical performances of mixed reagent begin to fall off 48 hours after its preparation.

PRECAUTIONS

TART R1: It is not classified as hazardous.

TART R2: Danger. Fatal if inhaled (H330). IF INHALED: Remove person to fresh air and keep confortable for breathing (P304+P340). Immediately call a POISON CENTER (P310). Store in a well-ventilated place. Keep container tightly closed (P403+P233).

TART BL: It is not classified as hazardous.

SPECIMEN

Wine or any foodstuff once its utilization has been tested.
Red wines should be decoloured with activated charcoal or PVPP 1% w/v.

PROCEDURE 1

Wavelength: 492 nm
Lightpath: 1 cm
Temperature: 37°C

dispense:	blank	standard	sample
reagent R1	2 ml	2 ml	2 ml
water	125 µl	-	-
standard	-	125 µl	-
sample	-	-	125 µl

Mix, incubate at 37°C for 2 minutes.
Read absorbances of standard (As_1) and sample (Ac_1) against reagent blank.

dispense:	blank	standard	sample
reagent R2	500 µl	500 µl	500 µl

Mix, incubate at 37°C for 10 minutes.
Read absorbances of standard (As_2) and sample (Ac_2) against reagent blank.

RESULTS CALCULATION

In a single-point calibration with the standard, the following formulation takes into account the intercept of calibration line:

$$\text{tartaric acid g/l} = \frac{Ac_2 - (0.8 \times Ac_1)}{As_2 - (0.8 \times As_1)} \times (\text{standard value} - 0.45) + 0.45$$

For a more accurate assay of tartaric acid, it is suggested to build a calibration line, by using at least two standard values.

PROCEDURE 2 (cell flow instruments)

Wavelength: 492 nm
Lightpath: 1 cm
Temperature: 37°C

dispense:	reagent blank	standard	sample blank	sample
water	100 µl	-	-	-
standard	-	100 µl	-	-
sample	-	-	100 µl	100 µl
reagent	2 ml	2 ml	-	2 ml
blank	-	-	2 ml	-

Mix, incubate at 37°C for 10 minutes.
Read absorbances of reagent blank (Ar_1), standard (As_1), sample blank (Ac_2) and sample (Ac_1).

RESULTS CALCULATION

In a single-point calibration with the standard, the following formulation takes into account the intercept of calibration line:

$$\text{tartaric acid g/l} = \frac{Ac_1 - Ac_2 - Ar_1}{As_1 - Ar_1} \times (\text{standard value} - 0.45) + 0.45$$

For a more accurate assay of tartaric acid, it is suggested to build a calibration line, by using at least two standard values.

TEST PERFORMANCE

Specificity
The method is specific for tartaric acid.

Linearity
The method is linear up to 7 g/l.
If the limit value is exceeded, it is suggested to dilute the sample 1+1 with distilled water and to repeat the test, multiplying the result by 2.

Interferences
L-malic acid exerts a subtractive interference, lowering the tartaric acid value resulting from the assay. To get a true value of tartaric acid, the concentration of malic acid is determined, then the obtained value of tartaric acid is corrected through the following calculation :

corrected tartaric acid (g/l) = obtained tartaric acid + 0.14 x L-malic acid conc.

Precision

White wine

intra-assay (n=10)	mean (g/l)	SD (g/l)	CV%
sample	1.48	0.02	1.65
inter-assay (n=20)	mean (g/l)	SD (g/l)	CV%
sample	1.48	0.07	4.93

Red wine

intra-assay (n=10)	mean (g/l)	SD (g/l)	CV%
sample	1.50	0.01	0.92
inter-assay (n=20)	mean (g/l)	SD (g/l)	CV%
sample	1.49	0.06	4.20

Rose wine

intra-assay (n=10)	mean (g/l)	SD (g/l)	CV%
sample	1.22	0.02	2.04
inter-assay (n=20)	mean (g/l)	SD (g/l)	CV%
sample	1.22	0.06	4.85

WASTE DISPOSAL

This product is made to be used in professional laboratories.
P501: Dispose of contents according to national/international regulations.

REFERENCES

American journal of enology and viticulture 21, 153 (1970)
American journal of enology and viticulture 28, 104 (1977)
Journal of pharmacology 43, 351 (1931)

MANUFACTURER

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SYMBOLS

LOT lot of manufacturing
REF code number
storage at temperature interval
expiration date (year/month)
warning, read enclosed documents
read the directions

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