

Total SO₂ determination in dried apricots by modified Monier-Williams method

MultiDist and BasicDist: determination of total sulfur dioxide in dried apricot mousse as a reference sample & a reference standard sodium metabisulfite by modified Monier-Williams Method.

1. Introduction

Sulfites are widely used as a preservative and antioxidant in foods and beverages. Exposure to high levels of sulfites can cause an allergic reaction. Given the health risks associated with sulfite exposure, the amount in beverages and foods is regulated in many countries. Regulations set the maximum amount of sulfites used and required labelling practice to indicate the presence of sulfites.

2. Experiment

Sample:

Apricot mousse, Sodium-metabisulfite

Equipment:

MultiDist with EcoTitrator (11K36532211)

Procedure:

SO₂ determination involves *in-situ* acidification of the sample by dosing an acid mixture, followed by distillation in two steam steps and simultaneous collection of the distillate in 3 % H₂O₂ solution. After the distillation a pH titration is carried out against standard NaOH using EcoTitrator.

Table 1. Method parameters MultiDist.

Parameters	Settings
Reaction time	5 s
Distillation Time	600 s
Titration type	Boric acid Titration



3. Results

The results of SO₂ determination and recovery for the distillations are presented in Table 2.

Table 2. Results Reference substance and sample apricot mousse and dried bio-apricots (n= 3 Sodium-metabisulfite, n= 5 samples)

Sample	SO ₂ concentration declared	Declared Standard Deviation	Ø SO ₂ concentration measured	Recovery [%]	RSD [%]
Sodium-metabisulfite	10.299 mg	-	-	88.67	2.98
Apricot mousse	2080.4 ppm	102.97 ppm	1952.26 ppm	-	0.379

4. Conclusion

The recoveries for reference standard sodium metabisulfite were above 85%. The obtained SO₂ concentrations match the declared SO₂ content on Apricot mousse reference samples from LVU very well. The developed modified Monier-Williams method for total SO₂ determination is recommended especially in absence of volatile acids in the samples with low SO₂ concentrations. For further information please download the full application note from the website.

5. References

Application Note No. 761/2021: Total SO₂ determination in dried apricots by modified Monier-Williams method
 Compendium of International Methods of Analysis –OIV, Sulfur dioxide, Method OIV-MA-AS323-04A
 AOAC Official Method 990.28, Sulfites in Foods, Optimized Monier-Williams Method
 European Patent EP 2 515 098 A1, Verfahren und Vorrichtung zur SO₂-Gehaltsbestimmung in Getränken und Lebensmitteln, Büchi Labortechnik AG.
 Operation Manual of Distillation Unit MultiDist