35th Joint Arab Codex Contact Points and CCNE Coordination Meeting

PREPARATION FOR THE 44th SESSION OF THE CODEX COMMITTEE ON METHODS OF ANALYSIS AND SAMPLING

(CCMAS44)

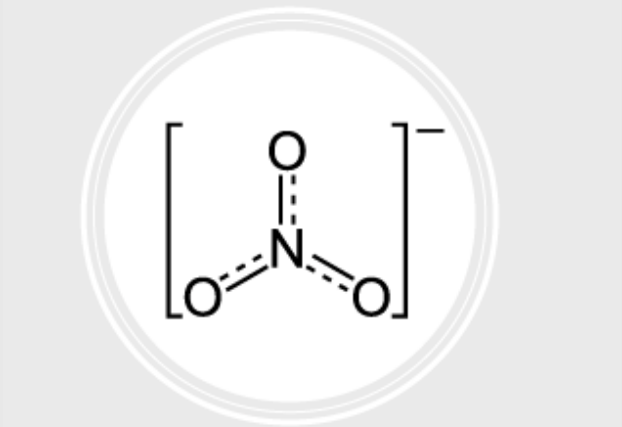
Dr. Hadi Elalem, Libya

April 20, 2025

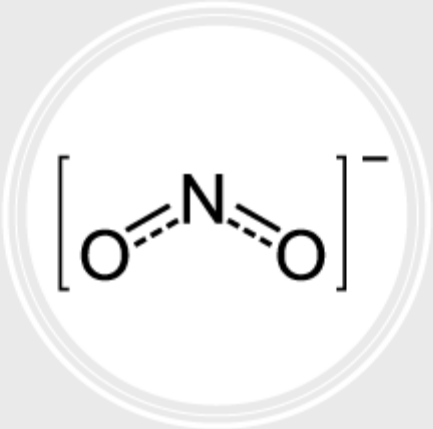
Agenda Item 7

Numeric Performance Criteria for the Determination of Nitrate and Nitrite ions in Food Matrices

CX/MAS 25/44/10



NITRATE



NITRITE

BACKGROUND

In its 52nd session (2021), CCFA requested CCMAS to:

- Establish criteria for the detection of nitrate and nitrite ions in a variety of food matrices, specifically dairy (cheese), meat, and seafood; and
- Provide information on available methods for detection that met the established criteria, and in addition whether the method can detect both ions and if so whether the method detects each ion separately or only in combination.

Appendix 1: Numeric performance criteria for the adopted MLs

Food Additive	Subcategory for which value was provided	Adopted Maximum Levels (CXS 192-1995)*	Calculated method performance criteria based on Maximum level (mg/kg)					
			Min Appl. Range (mg/kg)	LOD (mg/kg)	LOQ (mg/kg)	Precision (RSD_R (%))	Recovery (%)	Examples of applicable methods that meet the criteria
01.6 (*Cheese and analogues)*								
Nitrate	01.6.2 *(Ripened cheese)*	35 mg/kg as residual NO_3 ion.	25.2 - 44.8	3.5	7	18.7	80 – 110	**Multi-laboratory validation** - ISO 14673-3 I IDF 189-3: 2004 **Single-laboratory validation -** ISO 14673-2 I IDF 189-2: 2004^
08.0 (*Me at and meat products, including poultry and game)*								
Nitrite	08.2.2 (Heat-treated processed meat, poultry, and game products in whole pieces or cuts/)	80 mg/kg as residual NO_2 ion.	100 - 160	13	26	15.4	90 – 107	**Multi-laboratory validation** - AOAC Method 973.31; NMKL 165: 2000 Ed.; **Single-laboratory validation** - Afanda et al., (2025); Iammarino et al. 2013; Ferreira et al. (2008) for Ham; Siu et al., 1998 for Salami and Ham
Nitrite	08.3 (Processed comminuted meat, poultry, and game products)	80 mg/kg as residual NO_2 ion.	100 - 160	13	26	15.4	90 – 107	**Multi-laboratory validation** - AOAC Method 973.31; NMKL 165: 2000 Ed.; **Single-laboratory validation** - Afanda et al., (2025); Iammarino et al., 2013; Ferreira et al., (2008) for Ham; Siu et al., 1998 for Salami and Ham

Appendix 2: Numerica performance criteria for the lowest proposed residual MLs for representative provisions in dairy (cheese), meat, and seafood as provided in CX/FA 21/52/7 Appendix 5 Annex 2.

Food Additive	Subcategory for which value was provided	Lowest Proposed Residual ML (mg/kg)	Notes	Calculated method performance criteria based on the Lowest Proposed Residual ML					Examples of applicable methods that meet the criteria
				Min Appl. Range (mg/kg)	LOD (mg/kg)	LOQ (mg/kg)	Precision (RSD_R (%))	Recovery (%)	
01.6 (*Cheese and analogues)*									
Nitrate	01.6.2.1 *(Ripened cheese, includes rind)*	7	As NO_3	4.5 – 9.5	0.7	1.4	23.9	80 – 110	**Multi-laboratory validation** - ISO 14673-3 I IDF 189-3: 2004 **Single-laboratory validation -** ISO 14673-2 I IDF 189-2: 2004^
Nitrite	01.6.~~1~~4 *(Processed cheese) *(see note 1)*	2	As NO_2	1.1 – 2.9	0.2	0.4	28.8	80 – 110	**Multi-laboratory validation** – not available. **Single-laboratory validation** – not available.
08.0 (*Meat and meat products, including poultry and game)*									
Nitrate	Same residual proposed in multiple food categories including 08.2.1.1 *(Cured (including salted) non-heat treated processed meat, poultry, and game products in whole pieces or cuts)*	7	As NO_3	4.5 – 9.5	0.7	1.4	23.9	80 – 110	**Multi-laboratory validation** – not available. **Single-laboratory validation** - Afanda, et al.,(2025); Ferreira et al., (2008) for Ham
Nitrite	08.2.1.3 *(Fermented non-heat treated processed meat, poultry, and game products in whole pieces or cuts)*	33	As NO_2	23.6 – 42.4	3.3	6.6	18.9	80 – 110	**Multi-laboratory validation** - EN 12014-3:2005, NMKL 165: 2000 Ed.; AOAC Method 973.31; **Single-laboratory validation** - Afanda, et al., (2025), Ferreira et al., (2008) for Ham; Siu et al., 1998 for Salami, Ham

RECOMMENDATION

CCMAS44 is invited to consider the findings highlighted in this report in response to CCFA's requests; and:

- consider and agree on the numeric performance criteria for nitrates and nitrites in Appendix 1 and Appendix 2 and refer these to CCFA for their consideration;
- decide if more work is needed to source applicable methods for Appendices 1 & 2 where none could be identified from Appendix 3; and
- examine the validation data for the methods included in Appendix 3 and whether this information needs supplementation.


thank you
danke
謝謝
ngiyabonga
рахмат
teşekkür ederim
Баярлалаа
спасибо
faafetai lava
vinaka
спасибі
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dank je
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kam sah hamnida
.তোমাকে ধন্যবাদ
감사합니다
xièxie
ευχαριστώ
merci
شكرا
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