SAĞLIK BİLİMLERİ ÜNİVERSİTESİ
UNIVERSITY OF HEALTH SCIENCES

Bioanalytical approach to chemical injuries exposed to sulfur mustard

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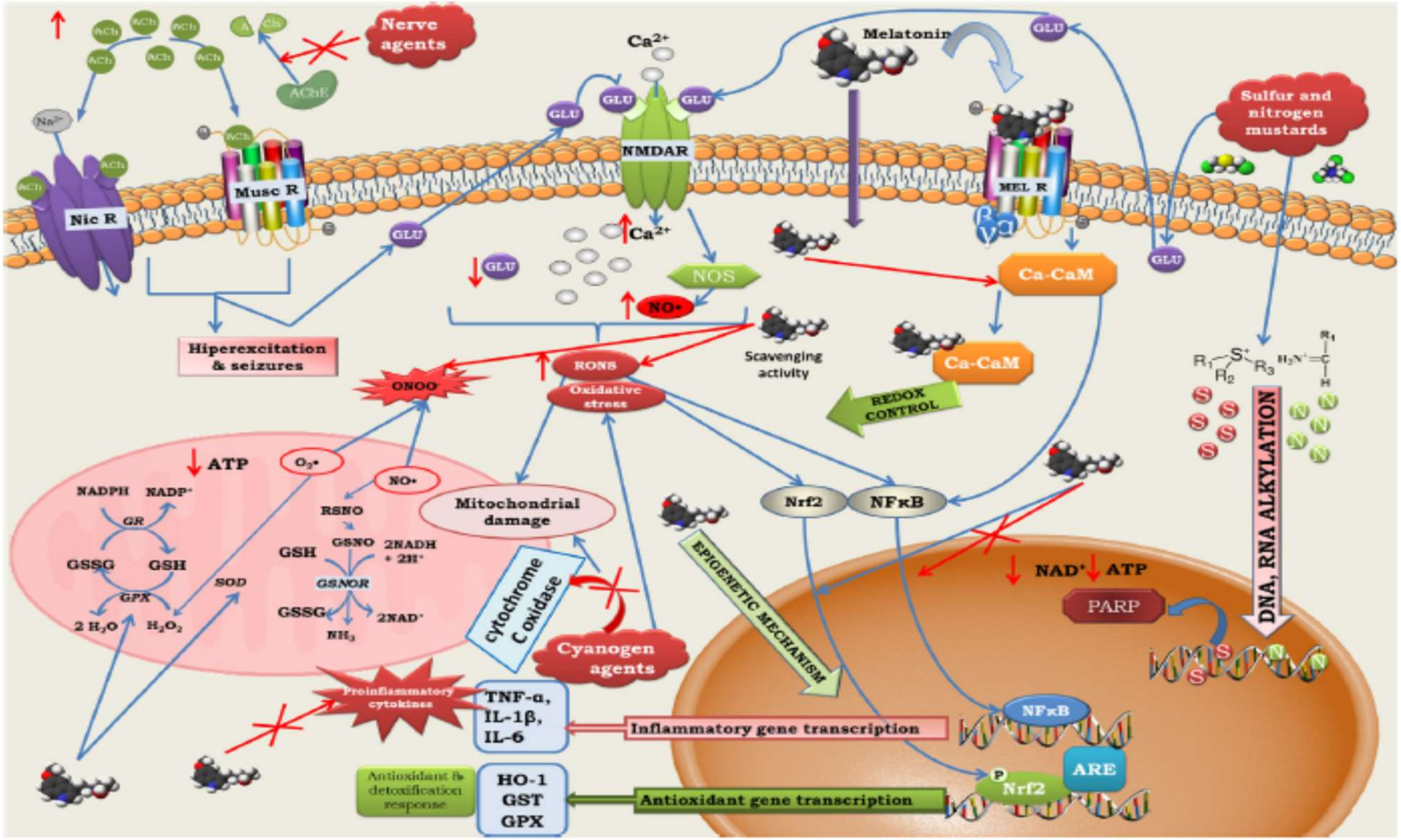

Toxicity induced by chemical warfare agents: Insights on the protective role of melatonin

René Pita [a], José Marco-Contelles [b], Eva Ramos [c], Javier del Pino [c], Alejandro Romero [c,*]

II. ULUSLARARASI KBRN KONGRESİ 2019-ANKARA

July 12, 1917/ Ypres, Belgium

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Syria and the OPCW

OPCW in Syria FAQs Related News Related Documents

The Organisation for the Prohibition of Chemical Weapons (OPCW) has been actively involved in Syria since its accession to the Chemical Weapons Convention (CWC) in 2013.

OPCW-UN Joint Mission

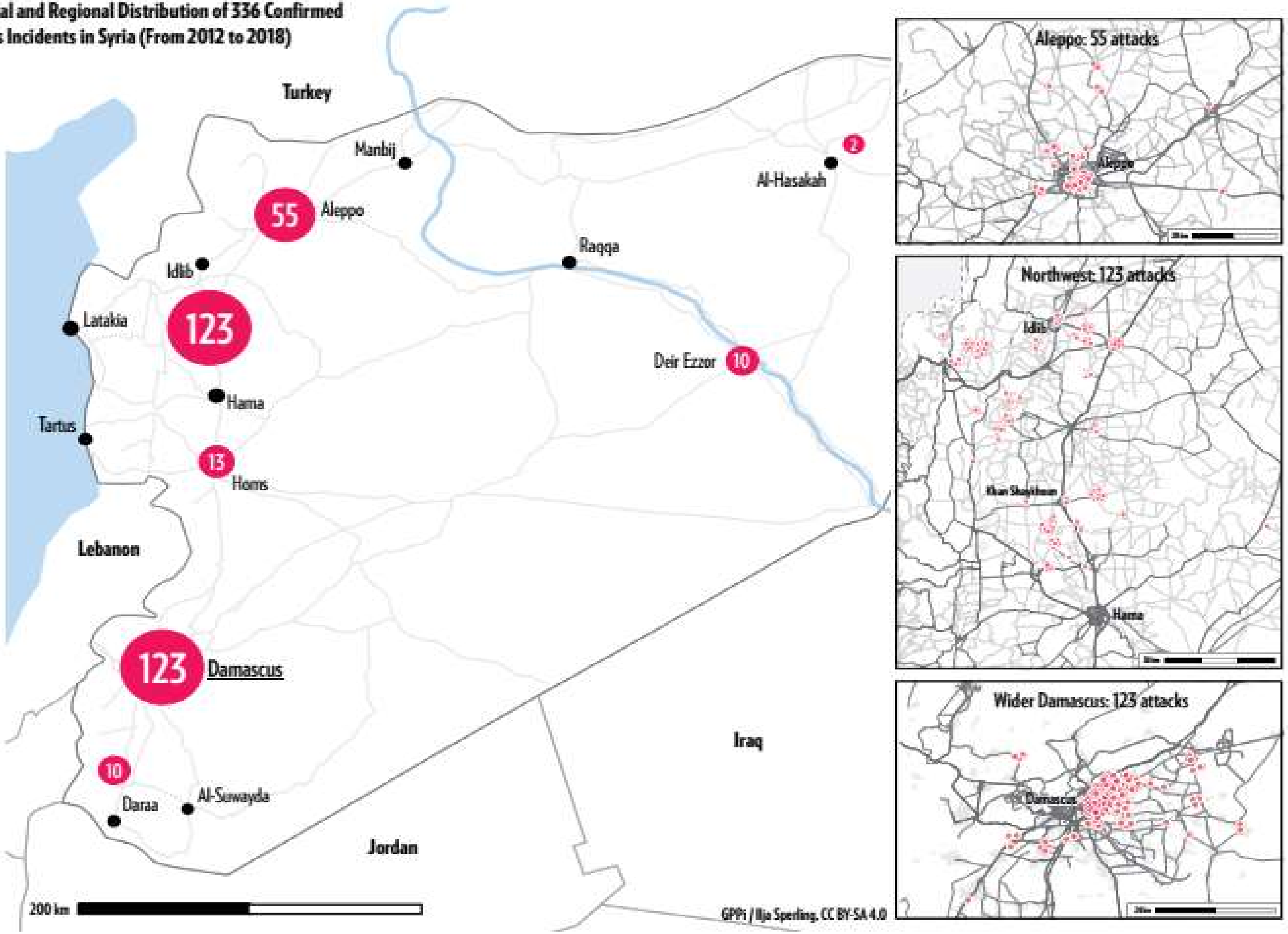
The OPCW-UN Joint Mission was formally established on 16 October 2013 to oversee the timely elimination of the chemical weapons programme of the Syrian Arab Republic

OPCW Fact-Finding Mission (FFM)

The OPCW Fact-Finding Mission (FFM) was set up in 2014 to establish facts surrounding allegations of the use of toxic chemicals, reportedly chlorine, for hostile purposes in

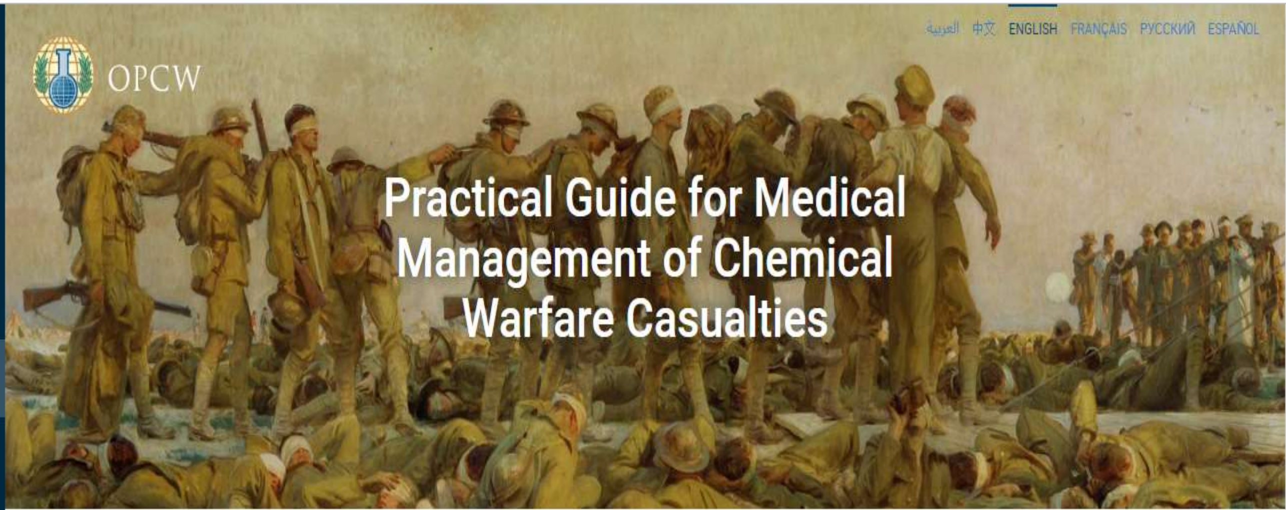

AFP

Map 1: Geographical and Regional Distribution of 336 Confirmed Chemical Weapons Incidents in Syria (From 2012 to 2018)



Source: Data collected by GPPi

Map vector data derived from: © OpenStreetMap contributors and Natural Earth (Public Domain)



Practical Guide for Medical Management of Chemical Warfare Casualties

In recognition of the importance of providing assistance to victims of chemical weapons, the OPCW has developed this guidebook for medical practitioners who care for the victims of chemical warfare.

Image: *Gassed* by John Singer Sargent © Imperial War Museum (Art.IWM ART 1460)

Chapter 1

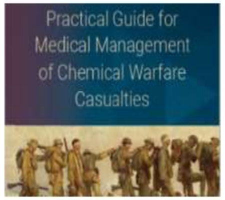
Provides medical practitioners with an appreciation of the history of the development and use of chemical weapons, the types of chemicals which have been used as chemical weapons and a brief summary of the efforts of the international community to prohibit the use of such chemicals.

Chapter 2

Deals with the general considerations in management of chemical casualties, and provides an overview of basic concepts that should be considered by medical personnel involved in the management of a chemical weapon incident.

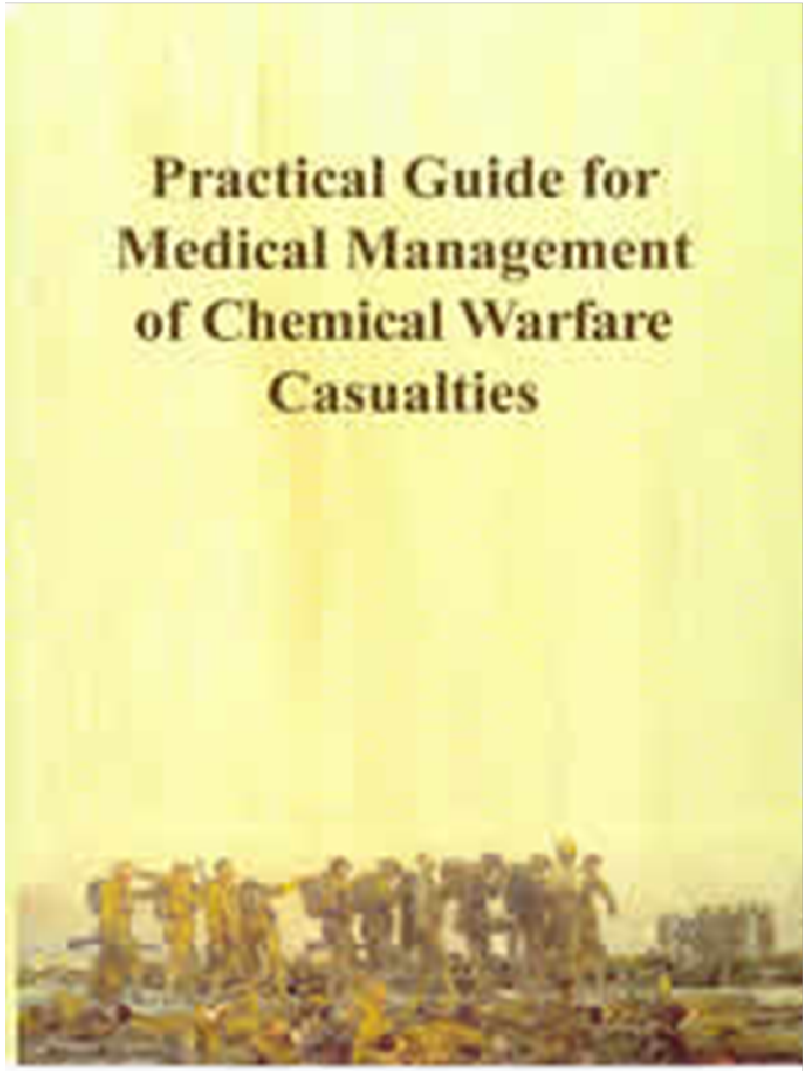
Chapters 3 to 8

Deal with the medical management of casualties caused by: Vesicants (blister agents); nerve agents; lung-damaging (choking) agents; blood agents; riot control agents (sensory irritants); and toxins (in particular ricin plant toxin and saxitoxin marine toxin), respectively. Issues covered for each class of chemical warfare agents include their mechanism of toxicity, signs and symptoms occurring after an



Practical Guide for Medical Management of Chemical Warfare Casualties

Arabic
Chinese
English
French
German
Spanish
Turkish
Persian (Farsi)



Kimyasal Savaş Yaralılarının Tıbbi Yönetimi İçin Pratik Rehber

KSYÖ

Kimyasal Silahların Yasaklanması Örgütü

Uluslararası İşbirliği ve Yardım Bölümü

Destek ve Korunma Kısmı

2016

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Toxicology Letters 303 (2019) 9–15

Contents lists available at ScienceDirect

Toxicology Letters

journal homepage: www.elsevier.com/locate/toxlet

Victims of chemical terrorism, a family of four who were exposed to sulfur mustard☆

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Photo courtesy of Dr. Sezigen

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Photo courtesy of Dr. Sezigen

Osmangazi Tıp Dergisi
Osmangazi Journal of Medicine

Araştırma Makalesi
Research Article

Hardal Gazına Maruz Kalmış Kimyasal Yaralıların Tıbbi Yönetiminin Retrospektif Değerlendirilmesi ve Öneriler

Retrospective Evaluation of Medical Management of Chemical Casualties Who were Exposed to Sulfur Mustard and Recommendations

Sermet Sezigen, Levent Kenar

Sağlık Bilimleri Üniversitesi, Gülhane Sağlık Bilimleri Enstitüsü, Tıbbi KBRN Ana Bilim Dalı, Ankara, Türkiye

Photo courtesy of Dr. Sezigen

II. ULUSLARARASI KBRN KONGRESİ 2019-ANKARA

CUTANEOUS AND OCULAR TOXICOLOGY
https://doi.org/10.1080/15569527.2018.1464018

Taylor & Francis
Taylor & Francis Group

ORIGINAL ARTICLE

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Acute intensive care unit management of mustard gas victims: the Turkish experience*

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[a]Department of Anesthesia and Reanimation, Sehitkamil State Hospital, Gaziantep, Turkey; [b]Department of Medical CBRN Defense, University of Health Sciences, Etlik/Ankara, Turkey

ABSTRACT

Purpose: Sulphur mustard (SM) is an highly toxic and vesicant chemical weapon that was used in various military conflicts several times in the history. The severity of ocular, dermal, and pulmonary symptoms that may appear following a characteristic asymptomatic period are depending on the SM concentration and exposure duration. The aim of this study is to present the clinical features and share the intensive care unit (ICU) experiences for the medical management of mustard gas victims.
Materials and methods: Thirteen Free Syrian Army soldiers near Al-Bab region of North Syria were reportedly exposed to oily blackish smoke with garlic smell due to the explosion of a trapped bomb without causing any blast or thermal effect on 26th November 2016. None of them wore any chemical protective suits or gas masks during explosion. Since they observed skin lesions including bullous formation next day, they were admitted to the Turkish Field Hospital at the Turkish – Syrian border and then evacuated to the State Hospital of Gaziantep Province, Turkey for further management. Eight victims who were very close to point of explosion suffered burning eyes, sore throat, dry cough and dyspnoea after the chemical attack.
Results: On admission to hospital, all cases had conjunctivitis, hoarseness and bullae on various body areas. Blepharospasm and opacity were found in 8 patients and 5 of them had corneal erosions and periorbital oedema. Temporary loss of vision in 4 cases lasted for 24 h. Multiple fluid-filled blisters were observed especially on the scalp, neck, arms and hands, where direct skin exposure to the agent occurred. A definitive clinical care and infection prophylaxis measures along with the burn treatment and bronchodilators for respiratory effects were applied in ICU. Two patients received granulocyte-colony-stimulating factor due to the SM-mediated bone marrow suppression on the 16th day of exposure and one of them died because of necrotic bronchial pseudomembrane obstruction resulting in cardiopulmonary arrest.
Conclusions: SM was first used during the First World War and it is still considered one of the major chemical weapons recently used by non-state actors in Syria and Iraq. In case of SM exposure, medical treatment of SM-induced lesions is symptomatic because no antidote or causal therapy does exist even though SM is very well known for over 100 years. However, clinical management in intensive care medicine of SM victims have improved since the 1980s, this study which is one of the largest recent SM-exposed case series since that time is important for the contribution to the clinical experience.

ARTICLE HISTORY
Received 19 February 2018
Accepted 7 April 2018

KEYWORDS
Chemical warfare agents; sulphur mustard; toxic exposure; intensive care unit; treatment; vesicants

Toxicology Letters 318 (2020) 92–98

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Contents lists available at ScienceDirect

Toxicology Letters

journal homepage: www.elsevier.com/locate/toxlet

Myelosuppression and acute hematological complications of sulfur mustard exposure in victims of chemical terrorism

Sermet Sezigen*, Rusen Koray Eyison, Mesut Ortatatli, Ertugrul Kilic, Levent Kenar

University of Health Sciences, Dept. of Medical CBRN Defense, Etlik, 06010, Ankara, Turkey

Photo courtesy of Dr. Sezigen

II. ULUSLARARASI KBRN KONGRESİ 2019-ANKARA

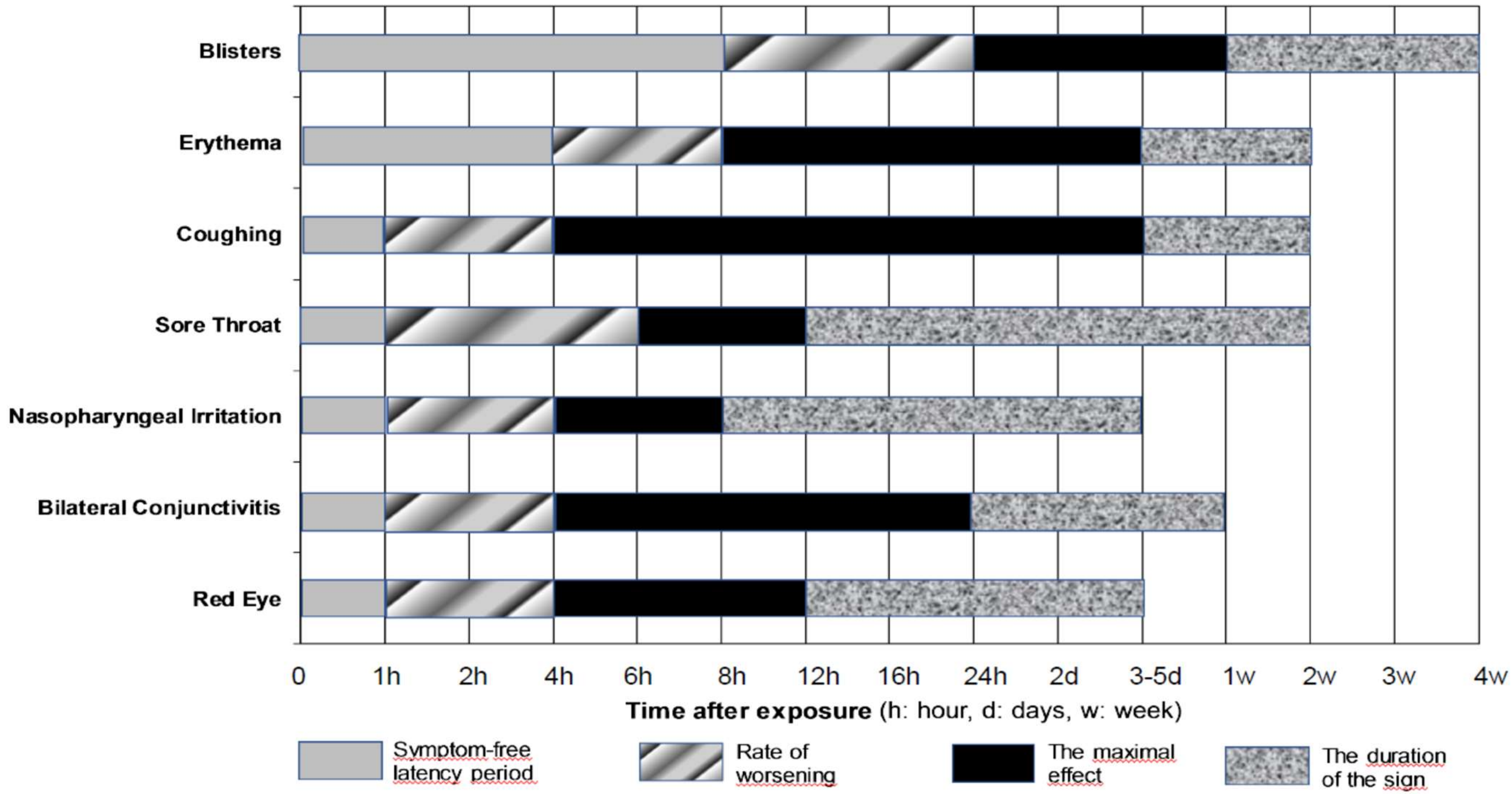

Fig. 1. Toxicodynetics of ocular, respiratory, and cutaneous symptoms after SM exposure which describe the delay in onset, rate of worsening, duration of maximal effect, and recovery phase (n=13).

**Sezigen et al., 2019. Myelosuppression and acute hematological complications of sulfur mustard exposure in victims of chemical terrorism. Toxicology Letters, 318, 92-98.*

II. ULUSLARARASI KBRN KONGRESİ 2019-ANKARA

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OPCW

News

Statement from OPCW Spokesperson in response to media queries regarding alleged use of nerve agent VX in Malaysia

24 FEBRUARY 2017

According to media reports, the Malaysian authorities seem to have determined that the nerve agent VX was used in a killing at the airport on 13 February. Any use of chemical weapons is deeply disturbing. OPCW stands ready to provide its expertise and technical assistance, if required, to any State Party to the Chemical Weapons Convention.

Malaysia

Kim Jong-nam, the half-brother of North Korean leader Kim Jong-un

OPCW **Technical Secretariat**

S/1612/2018
12 April 2018
Original: ENGLISH

NOTE BY THE TECHNICAL SECRETARIAT

SUMMARY OF THE REPORT ON ACTIVITIES CARRIED OUT IN SUPPORT OF A REQUEST FOR TECHNICAL ASSISTANCE BY THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND (TECHNICAL ASSISTANCE VISIT TAV/02/18)

1. The United Kingdom of Great Britain and Northern Ireland requested technical assistance from the OPCW Technical Secretariat (hereinafter "the Secretariat") under subparagraph 38(e) of Article VIII of the Chemical Weapons Convention in relation to an incident in Salisbury on 4 March 2018 involving a toxic chemical—allegedly a nerve agent—and the poisoning and hospitalisation of three individuals. The Director-General decided to dispatch a team to the United Kingdom for a technical assistance visit (TAV).

2. The TAV team deployed to the United Kingdom on 19 March for a pre-deployment and from 21 March to 23 March for a full deployment.

3. The team received information on the medical conditions of the affected individuals, Mr Sergej Skripal, Ms Yulia Skripal, and Mr Nicholas Bailey. This included information on their acetylcholinesterase status since hospitalisation, as well as information on the treatment regime.

4. The team was able to collect blood samples from the three affected individuals under full chain of custody for delivery to the OPCW Laboratory and subsequent analysis by OPCW designated laboratories, and conducted identification of the three individuals against official photo-ID documents.

5. The team was able to conduct on-site sampling of environmental samples under full chain of custody at sites identified as possible hot-spots of residual contamination. Samples were returned to the OPCW Laboratory for subsequent analysis by OPCW designated laboratories.

6. The team requested and received splits of samples taken by British authorities for delivery to the OPCW Laboratory in Rijswijk, the Netherlands, and subsequent analysis by OPCW designated laboratories. This was done for comparative purposes and to verify the analysis of the United Kingdom.

7. The team was briefed on the identity of the toxic chemical identified by the United Kingdom and was able to review analytical results and data from chemical analysis of biomedical samples collected by the British authorities from the affected individuals, as well as from environmental samples collected on site.

CS-2018-0991(E

Salisbury Incident, March 04, 2018

OPCW **Technical Secretariat**

S/1671/2018
4 September 2018
Original: ENGLISH

NOTE BY THE TECHNICAL SECRETARIAT

SUMMARY OF THE REPORT ON ACTIVITIES CARRIED OUT IN SUPPORT OF A REQUEST FOR TECHNICAL ASSISTANCE BY THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND (TECHNICAL ASSISTANCE VISIT TAV/03/18 AND TAV/03B/18 "AMESBURY INCIDENT")

1. The United Kingdom of Great Britain and Northern Ireland requested technical assistance from the OPCW Technical Secretariat (hereinafter "the Secretariat") under subparagraph 38(e) of Article VIII of the Chemical Weapons Convention in relation to an incident in Amesbury on 30 June 2018 involving a toxic chemical and the poisoning and hospitalisation of two individuals and the subsequent death of one. The Director-General decided to dispatch a team to the United Kingdom for a technical assistance visit (TAV).

2. The TAV team deployed to the United Kingdom from 15 July to 18 July 2018 to collect biomedical samples and again on 13 August 2018 to obtain an additional environmental sample.

3. The team received information on the medical condition of the surviving affected individual, Mr Charles Rowley. This included information on his acetylcholinesterase status since hospitalisation, as well as information on the treatment regime.

4. The team was able to collect blood samples from Mr Charles Rowley for transport to the OPCW Laboratory and subsequent analysis by OPCW Designated Laboratories. Mr Rowley was able to give informed consent himself.

5. The team attended and observed the post-mortem (autopsy) of Ms Dawn Sturgess. The team was able to collect a number of biomedical samples (mainly tissue samples) for transport to the OPCW Laboratory and subsequent analysis by OPCW Designated Laboratories. Consent for this procedure was obtained from the next-of-kin of Ms Sturgess, and the activity was carried out in compliance with the United Kingdom Human Tissue Act.

6. The team requested and received splits of biomedical samples collected by the British authorities for delivery to the OPCW Laboratory and subsequent analysis by OPCW Designated Laboratories. This was done for the purposes of comparison and in order to verify the analysis conducted by the United Kingdom.

CS-2018-1313(E

Amesbury Incident, June 30, 2018

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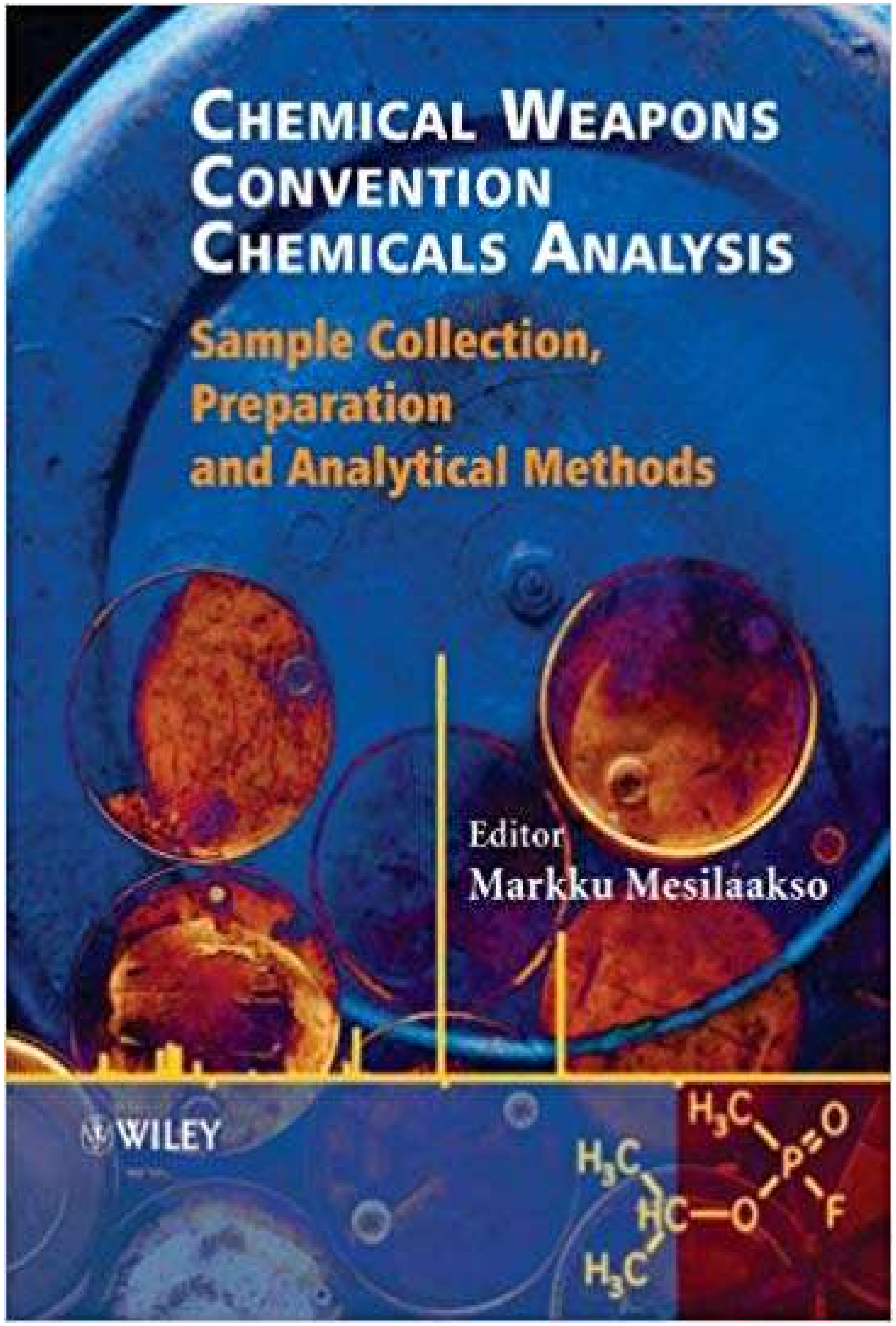
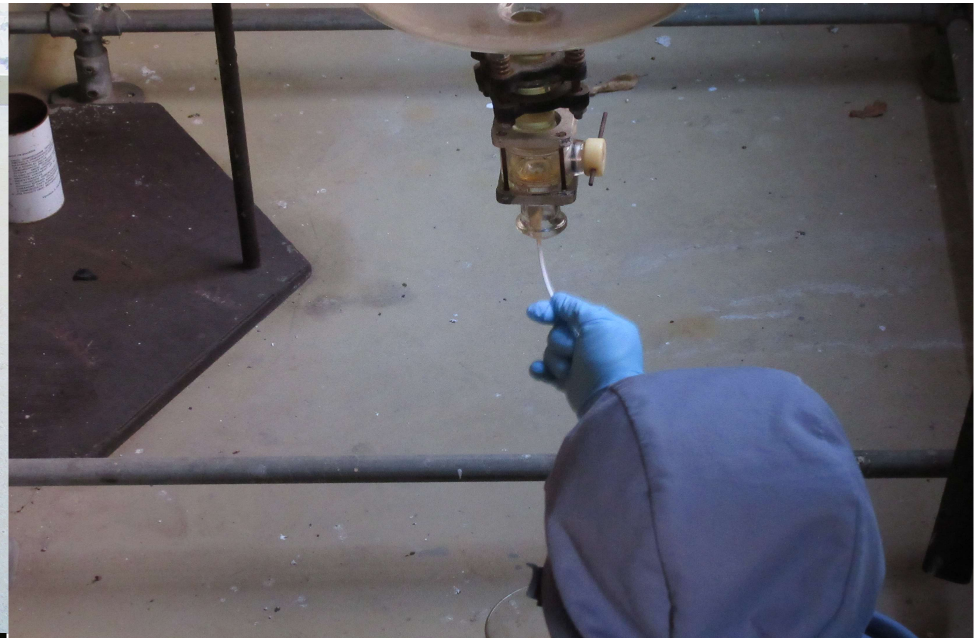


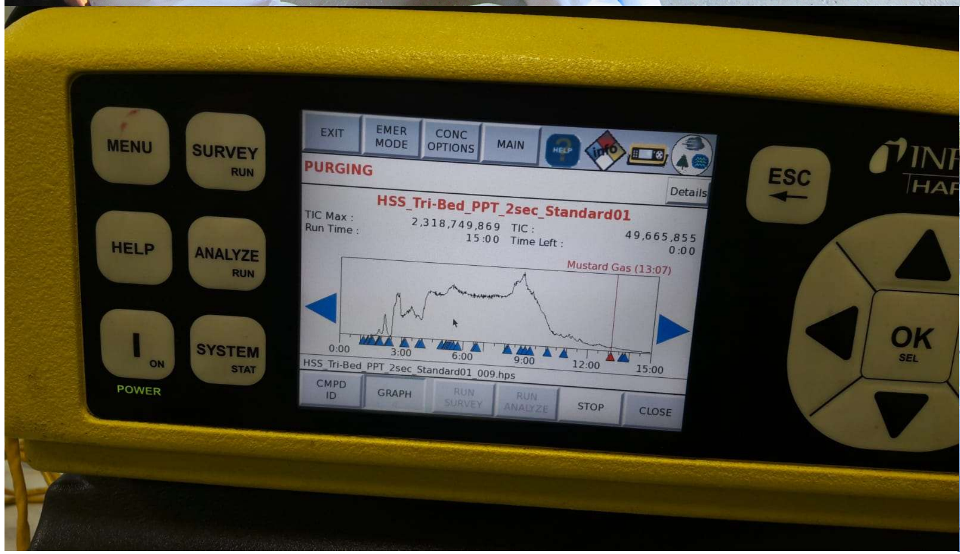
Section 2. Sample Preparation – Part A. General Methods

Part Editor: Kuitunen

Section 2. Sample Preparation – Part B. Established Methods

Part Editor: Kuitunen





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Journal of Analytical Toxicology, Vol. 32, January/February 2008

Analysis of Urinary Metabolites of Sulfur Mustard in Two Individuals after Accidental Exposure

John R. Barr[1,*], Carrie L. Pierce[1], J. Richard Smith[2], Benedict R. Capacio[2], Adrian R. Woolfitt[1], Maria I. Solano[1], Joe V. Wooten[1], Sharon W. Lemire[1], Jerry D. Thomas[1], Doris H. Ash[1], and David L. Ashley[1]

[1]Centers for Disease Control and Prevention, 4770 Buford Highway, Atlanta, Georgia 30341 and [2]U.S. Army Medical Research Institute of Chemical Defense, 3100 Ricketts Point Road, Aberdeen Proving Ground, Maryland 21010-5400

Toxicology Reports 1 (2014) 533–543

Contents lists available at ScienceDirect

Toxicology Reports

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journal homepage: www.elsevier.com/locate/toxrep

toxicology reports

Four sulfur mustard exposure cases: Overall analysis of four types of biomarkers in clinical samples provides positive implication for early diagnosis and treatment monitoring

CrossMark

Hua Xu[a,1], Zhiyong Nie[a,1], Yajiao Zhang[a,1], Chunzheng Li[a,1], Lijun Yue[a,1], Wenfeng Yang[b], Jia Chen[a], Yuan Dong[a], Qin Liu[a], Ying Lin[a], Bidong Wu[a], Jianlin Feng[a], Hua Li[a], Lei Guo[a,**], Jianwei Xie[a,*]

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[b] PLA 307 Hospital, 100039 Beijing, China

Toxicology Letters 244 (2016) 112–120

Contents lists available at ScienceDirect

Toxicology Letters

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journal homepage: www.elsevier.com/locate/toxlet

Toxicology Letters

TL

Medical documentation, bioanalytical evidence of an accidental human exposure to sulfur mustard and general therapy recommendations

CrossMark

Dirk Steinritz[a,b], Enno Striepling[c], Klaus-Dieter Rudolf[c], Claudia Schröder-Kraft[d], Klaus Püschel[e], Andreas Hullard-Pulstinger[f], Marianne Koller[a], Horst Thiermann[a], Felix Gandor[g], Michael Gawlik[h], Harald John[a,*]

Archives of Toxicology (2019) 93:1881–1891

https://doi.org/10.1007/s00204-019-02461-2

TOXICOKINETICS AND METABOLISM

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Forensic evidence of sulfur mustard exposure in real cases of human poisoning by detection of diverse albumin-derived protein adducts

Harald John[1] · Marianne Koller[1] · Franz Worek[1] · Horst Thiermann[1] · Markus Siegert[1,2]

II. ULUSLARARASI KBRN KONGRESİ 2019 - ANKARA

JCS Journal of Chromatographic Science

Journal of Chromatographic Science, 2019, 1–6
doi: 10.1093/chromsci/bmz017
Article

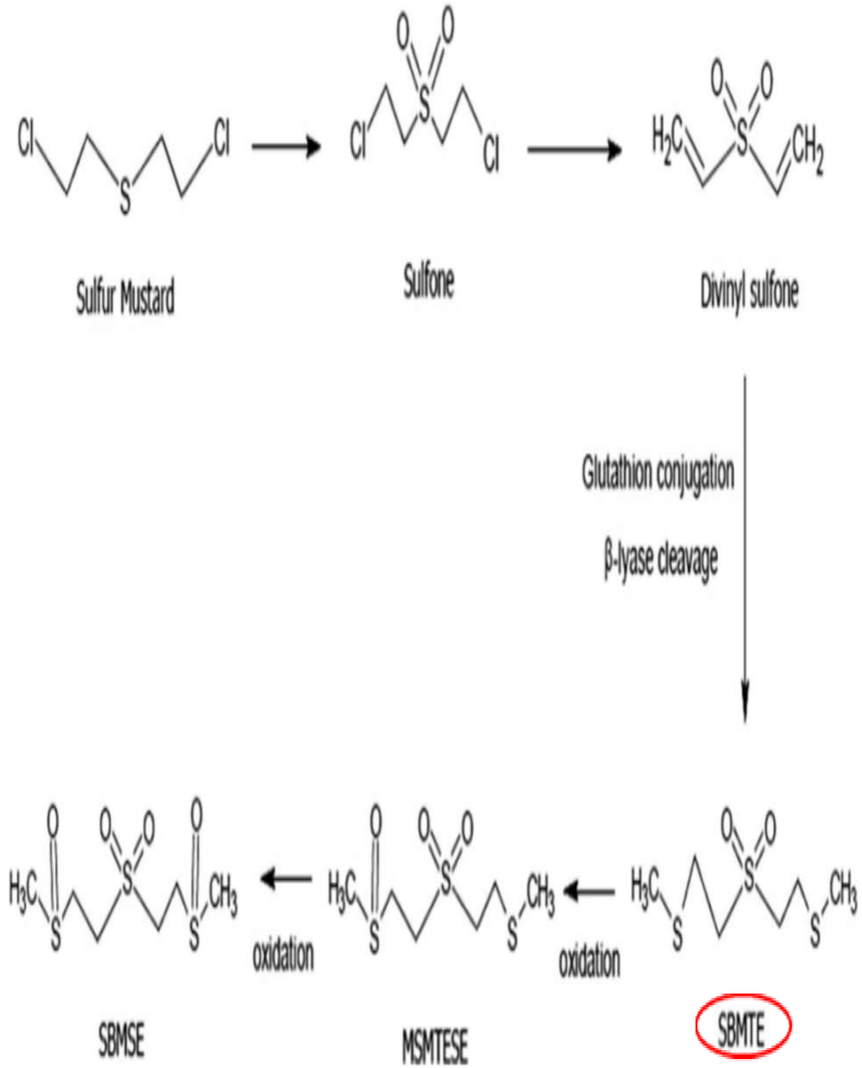
OXFORD

Article

Optimized Gas Chromatography-Tandem Mass Spectrometry for 1,1′-sulfonylbis[2-(methylthio) ethane] Quantification in Human Urine

Rusen Koray Eyison[1], Sermet Sezigen[1,*], Mesut Ortatatli[2], and Levent Kenar[1]

[1]Department of Medical CBRN Defense, University of Health Sciences, Ankara 06018, Turkey and [2]Gulhane Training and Research Hospital, Ankara 06010, Turkey



2017

II. ULUSLARARASI KBRN KONGRESİ 2019-ANKARA

64 Sezigen et al. / Gulhane Med J 2019;61: 64-68 ORIGINAL ARTICLE

Bioanalytical verification of sulfur mustard exposure in a Syrian family

Sermet Sezigen [1], Ruşen Koray Eyison [1], Levent Kenar [1]

(1) University of Health Sciences, Department of Medical CBRN Defense, Ankara, Turkey

Photo courtesy of Dr. Sezigen

CLINICAL TOXICOLOGY
https://doi.org/10.1080/15563650.2019.1614190

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BASIC RESEARCH

Evidence of sulfur mustard exposure in victims of chemical terrorism by detection of urinary β-lyase metabolites

Sermet Sezigen[a], Rusen Koray Eyison[a], Ertugrul Kilic[b] and Levent Kenar[a]

[a]Department of Medical CBRN Defense, University of Health Sciences, Ankara, Turkey; [b]Department of Anesthesia and Reanimation, SehitKamil State Hospital, Gaziantep, Turkey

Table 4. Accompanied symptoms of SM exposure, TABSA including erythema and blisters (%), and measured SBMTE levels (ng/mL) in urine samples of patients ($n = 13$) 30 h after SM exposure.

Patient	1	2	3	4	5	6	7	8	9	10	11	12	13
Ocular symptoms of SM exposure	+	+	+	+	+	+	+	+	+	+	+	–	–
Respiratory symptoms of SM exposure	+	+	+	+	+	+	+	–	–	–	–	–	–
Cutaneous symptoms of SM exposure	+	+	+	+	+	+	+	+	+	+	+	+	–
TABSA	40	35	35	30	28	25	24	21	5	5	3	2	<1
SBMTE	797	508	333	165	*	152	39	79	0	0	0	0	0

(+) Observed.
(–) Not observed.
*Not determined due to insufficient urine.

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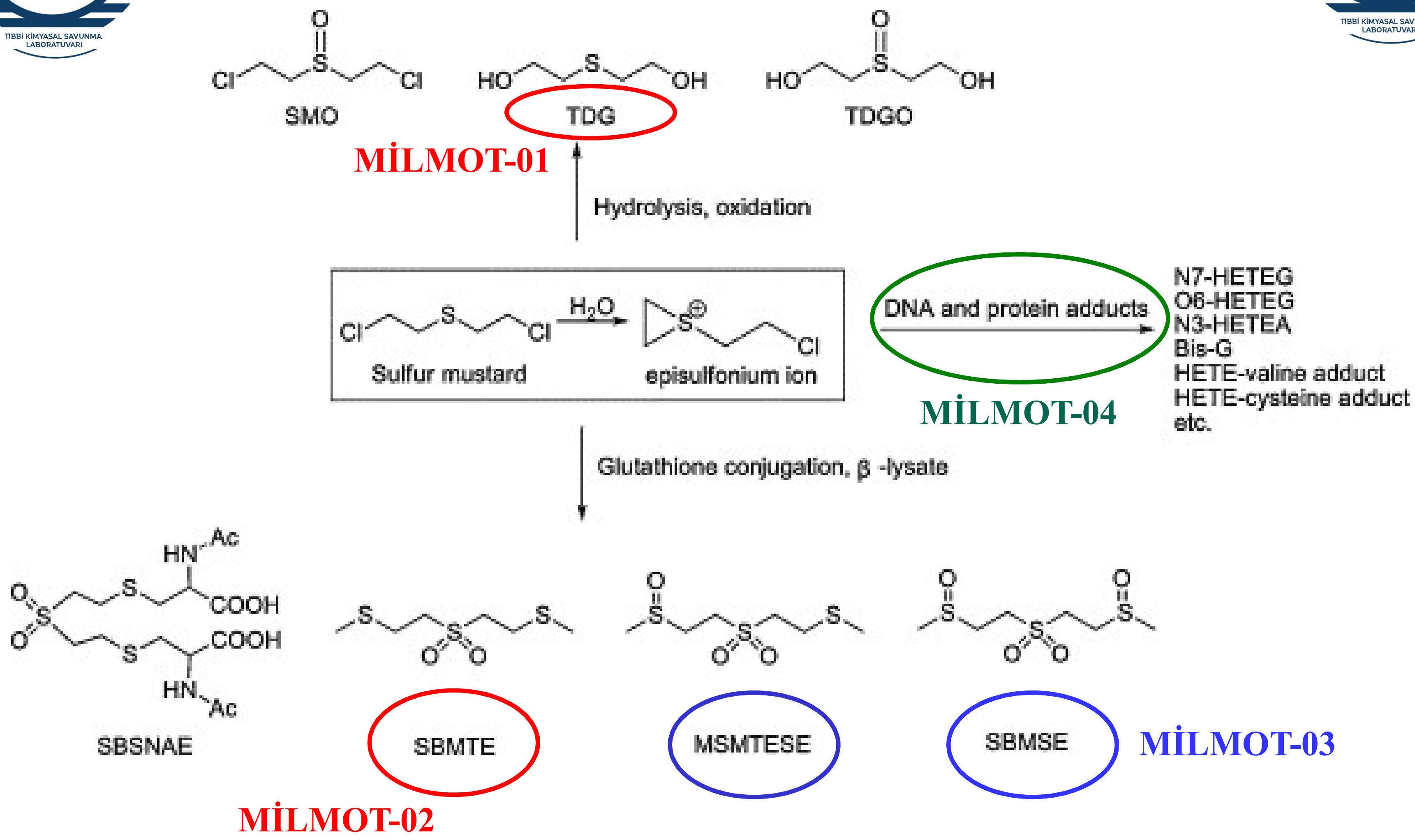
SÜLFÜR MUSTARD BİYOBELİRTEÇLERİNİN KALİTATİF VE KANTİTATİF TESPİTİ-MİLLİ METOD (MİLMOT)



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Courtesy of Dr. Sezigen

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