the Patch Tester

Contact Dermatitis | Haptens | Patch Testing

Edition #14
March 2023

THE EUROPEAN BASELINE VS. TRUE TEST EDITION

"The Patch Tester" is a quarterly e-magazine from Chemotechnique to the Patch Testers of the world.

We bring you the latest relevant news and developments in Patch Testing

Subscribe | Forward | Contact | Library

Chemotechnique Diagnostics
Chemotechnique cosmeceuticals

CONTENTS

PURPOSE

The Patch Tester is an e-mag developed by Chemotechnique to serve as an information resource for all Patch Testers and other Dermatologists around the world; not just in Sweden, or Europe, or America, but wherever the English language can be read and understood. This thirteenth issue comprises forty-two pages with various different topics and features. Ultimately, we plan for The Patch Tester to become the forum for all of us to communicate and cooperate, in all directions.

SUBSCRIBE

If you would like to subscribe to receive future issues of The Patch Tester, then please click on the “Subscribe” box on the front cover, or here. Be assured that your email address will be used by us solely for this purpose and will be held securely and never used for any other purposes. If you wish to receive any previous issues of The Patch Tester, then please use the Library function stated below.

LIBRARY

The Patch Tester is published every quarter, starting December 2019, March 2020, June 2020, October 2020, December 2020 and so on. If you would like to access back-issues of The Patch Tester then please click on the “Library” box on the front cover, or here.

FORWARD

If you would like to forward a copy of this edition of The Patch Tester to a colleague, then please click on the “Forward” box on the front cover, or here.

CONTACT

If you would like to contact Chemotechnique about any aspect of The Patch Tester, or any other topic of mutual interest, then please write to us by clicking the “Contact” box on the front cover, or here.

ACKNOWLEDGEMENTS

Production Editors:
David Alsheimer-Niklasson & Steve Lee

3 What’s New in Patch Testing
New Patch Test Unit from Chemotechnique

4 Editorial
New EBS vs TRUE Test

8 What’s New at Chemotechnique
New EBS vs TRUE Test

9 Hapten of the Quarter
Sorbitan Sequioleate

16 Hot Topic
Contact Allergy to Metal in in Metal Workers: A systematic Review and Meta-analysis

18 Literature Review

p.18 The Use of Sorbitan Sesquioleate in patch test preparations and patch testing with the substance – What do our Results Mean?

p.20 Nickel Allergy is associated with a broad-spectrum Cytokine Response

p.22 Patch Test Results in a Dutch Paediatric Population with suspected ACD: A R etrospective Cohort Study

p.26 The Additive Value of Patch Testing non-commercial Test Substances and Patients own products in a clinic of Occupational Dermatology

p.28 Presentations to Emergency Departments in Melbourne Australia diagnosed as ACD

p. 30 The Use of Carvone in consecutive Patch Testing

32 Website Review
The Patch Tester and Chemotechnique

34 Congresses & Exhibitions
Upcoming events for Dermatology & Allergy Professionals

New Patch Test Unit from Chemotechnique

Chemotechnique also now offer a third type of Patch Test Chamber, the BasIQ Ultra™
To complement the IQ Ultra™ and the IQ Ultimate™.

The new BasIQ Ultra™ is a development from the classical IQ Ultra in that it no longer includes a plastic cover plate, that was previously used to reseal the chamber sites when haptens had been pre-loaded. Without the plastic cover plate this type of simpler chamber unit is similar in some respects to chamber units from other manufacturers and so will be familiar to the Dermatology Nurse or Specialist who has hitherto used the simpler format. However, the BasIQ Ultra retains the great features of hexagonal sites with soft foam edges, hypoallergenic glue and tape, and integrated filter papers.
The BasIQ Ultra comes In a box with just 50 patch test units, each of 10 test sites, which makes this new BasIQ Ultra more suitable for smaller Patch Test Clinics with a lower throughput of patients.

Simply try out the IQ BasIQ Ultra and see for yourself if this simpler type of PT chamber is preferred by you and your patients. Now there is absolutely no reason not to use Chemotechnique patch Test chambers, of one type or another.

New EBS 2023 Comparison with TRUE Test®

In the February 2023 Issue number 2 of CONTANT DERMATITIS journal is the paper entitled The European baseline series and recommended additions: 2023 by S. Mark Wilkinson and colleagues. This was reviewed in the December 2022 edition of The Patch Tester, with page 6 showing the new 2023 EBS Series and the 2023 Extended EBS Series with recommended additions, and subtractions from the previous versions of the EBS.

The EBS now comprises 32 haptens whilst the extended EBS comprises 42 haptens.

Almost 40 years ago in 1985 Prof. Torkel Wadström of Sweden developed a test system based on the then prevailing European standard series of patch test haptens, as a fixed series of haptens in chambers on surgical tape. This was then commercialised by Pharmacia of Uppsala Sweden into the TRUE Test® with which every Dermatologist has become familiar over the intervening years.

At the time of its initial design, the selection of haptens for inclusion was based on the then-prevailing European Standard Series. Over the subsequent years, the EBS has evolved with the addition of new haptens and the removal of some less relevant haptens. Similarly, TRUE Test has evolved over the years, though to a much lesser extent due primarily to the regulatory requirements for this product that has from the outset been classified as a pharmaceutical, therefore requiring full pharmaceutical registration of each product and component part. Regulatory restrictions and cost considerations will continue to greatly inhibit any further development of the range of haptens in TRUE Test.

From the original 24 haptens, TRUE Test now comprises 35 haptens plus a Negative Control. However, it has over the years increasingly diverged from the prevailing European Baseline Series on which it was originally modelled.

There have been an enormous number of evaluations and subsequent publications about the relative merits and advantages/disadvantages of TRUE Test compared to the free-choice system of patch testing using individually selected haptens in various brands of chambers.

Now with the introduction of the new European Baseline Series and the Extended EBS is therefore an opportune time to compare just one parameter for the three different testing systems: the haptens in each of the three series.

The following table illustrates the haptens in each of the three series, and with additional information on the CAMP Ranking and the SPIN Factor of each hapten to indicate how important those haptens may be. If only it were that simple!!

The CAMP Ranking is a measure developed by the ACDS of the frequency of enquiries from USA Dermatologists of information on haptens contained in household products in USA. It can therefore

The EBS Extended Series (ECB-1000):					The TRUE TEST®			
Pos	**Art.no**	**S**	**C**	**Hapten**	**Pos**	**S**	**C**	**Hapten**
1	P-014A	22	23	Potassium dichromate	1	2	2	Nickel sulphate
2	P-006	7	13	p-Phenylenediamine	2	8	59	Wool alcohols
3	Mx-01	13	36	Thiuram mix	3	15	12	Neomycin sulphate
4	N-001	15	12	Neomycin sulfate	4	22	23	Potassium dichromate
5	C-017A	14	5	Cobalt chloride	5	36	87	Caine mix
6	Mx-19	36	87	Caine mix	6	3	1	Fragrance mix
7	N-002A	2	2	Nickel sulfate	7	20	35	Colophony
8	**H-010**	**26**	**40**	**2-Hydroxyethyl methacrylate**	8	30	37	Paraben mix
9	C-020	20	35	Colophonium	**9**	**-**	**-**	**Blank patch**
10	Mx-03C	30	37	Parabens mix	10	4	3	Balsam of Peru (Myroxylon pereirae)
11	**I-004**	**-**	**-**	**IPPD**	**11**	**33**	**42**	**Ethylenediamine dihydrochloride**
12	W-001	8	59	Lanolin (wool alcohols)	12	14	5	Cobalt chloride
13	Mx-05A	-	76	Mercapto mix	13	31	47	PTBT
14	E-002	27	57	Epoxy resin	14	27	57	Epoxy resin
15	B-001	4	3	Myroxylon pereirae	**15**	**33**	**17**	**Carba mix**
16	B-024	31	47	PTBT	**16**	**11**	**68**	**Black rubber mix**
17	M-003A	35	72	Mercaptobenzothiazole	17	1	4	MI / MCI
18	F-002B	6	6	Formaldehyde	**18**	**33**	**18**	**Quaternium 15**
19	Mx-07	3	1	Fragrance mix I	19	28	7	Methyldibromo glutaronitrile
20	**Mx-18**	**34**	**78**	**Sesquiterpene lactone mix**	20	7	13	p-Phenylenediamine
21	**S-011**	**18**	-	**Sodium metabisulfite**	21	6	6	Formaldehyde
22	**P-022**	**10**	**14**	**Propolis**	22	-	76	Mercapto mix
23	C-009B	1	4	MI / MCI	**23**	**-**	**19**	**Thiomersal**
24	B-033B	29	55	Budesonide	24	13	36	Thiuram mix
25	T-031B	18	38	Tixocortol pivalate	25	22	41	Diazolidinyl urea
26	D-049E	28	7	Methyldibromo glutaronitrile	**26**	**-**	**-**	**Quinoline mix**
27	**Mx-25**	**9**	**16**	**Fragrance mix II**	27	18	38	Tixocortol-21-pivalate
28	**L-003**	**4**	**80**	**Lyral**	**28**	**-**	**8**	**Gold sodium thiosulphate (GST)**
29	**M-035B**	**-**	**9**	**Methylisothiazolinone**	**29**	**-**	**51**	**Imidazolidinyl urea**
30	**B-003B**	**-**	**-**	**Benzisothiazolinone**	30	29	55	Budesonide
31	**Mx-30**	**24**	**86**	**Textile dye mix**	**31**	**32**	**74**	**Hydrocortizone-17-butyrate**
32	**D-065**	**17**	**31**	**Decyl glucoside**	32	35	72	Mercaptobenzothiazole
33	B-015B	23	26	2-Bromo-2-nitropropane-1,3-diol	**33**	**11**	**15**	**Bacitracin**
34	D-044A	22	41	Diazolidinyl urea	**34**	**-**	**93**	**Parthenolide**
35	**O-004**	**37**	**-**	**2-n-Octyl-4-isothiazolin-3-one**	**35**	**24**	**25**	**Disperse Blue 106**
36	**Mx-29B**	**21**	**33**	**Compositae mix II**	36	23	26	2-bromo-2-nitropropane-1,3-diol
37	**H-031A**	**-**	**21**	**Linalool hydroperoxide**				
38	**H-031B**	**-**	**21**	**Linalool hydroperoxide**				
39	**H-032A**	**15**	**32**	**Limonene hydroperoxide**				
40	**H-032B**	**15**	**32**	**Limonene hydroperoxide**				
41	**S-005**	**-**	**81**	**Sorbitan sesquioleate**				
42	**S-004**	**-**	**-**	**Sorbitan monooleate**				

Red: Hapten regarded as irrelevant for Baseline tesing by the ESCD and not present in EBS
Blue: Hapten regarded as relevant for Baseline testing by the ESCD but missing from the TRUE TEST
S: SPIN Rank, Lower figure = More clinically relevant
C: CAMP rank, Lower figure = More clinically relevant

be considered to be a rough indication of the prevalence of those haptens in patients presenting to USA-based Dermatologists. There are of course several significant factors that confound the information provided by the CAMP Rank, including the limitation to USA and the test methods and tested haptens prevalent in USA.

For further information on the CAMP system see:

1. American Contact Dermatitis Society Contact Allergy Management Program:
   An Epidemiologic Tool to Determine Relative Prevalence of Contact Allergens,
   by Andrew Scheman et al, in DERMATITIS, 27(1):9-10, Jan/Feb 2016.
   See: **doi:10.1097/DER.0000000000000151**
2. American Contact Dermatitis Society Contact Allergy Management Program:
   An Epidemiologic Tool to Quantify Ingredient Usage,
   by Andrew Scheman et al, in DERMATITIS, 27(1):11-13, Jan/Feb 2016
   See: **doi:10.1097/DER.0000000000000152**

The **SPIN Factor** (Significance-Prevalence Index Number) is based on a paper from the NACDG and is a measure of prevalence of the hapten combined with the clinical significance of that hapten. It therefore provides a very clear indication of which haptens are important to be included in any general screening series. At the one extreme is of course MI and MI/MCI (SPIN Factors 763 and 565 respectively) which are not only frequently encountered but also are extremely strong sensitisers, thereby resulting in an extremely high SPIN factor. Towards the other end of the scale (in the NACDG Patch Test Results for 2017/8) is Black Rubber Mix, which attained a SPIN factor score of just 21. It can be inferred that MI + MCI/MI is approx. 30 times more clinically important as a hapten than Black Rubber Mix. It is therefore revealing to see in a table the SPIN Factor values of the named haptens in the TRUE Test and the EBS 2023 and Extended EBS 2023. There are of course limitations to the SPIN factor, not the least of which is the bias shown by the low frequency of testing with novel haptens, particularly those not present in TRUE Test, which are therefore under-represented in the SPIN Score.

For further information on the SPIN Factor see:

North American Contact Dermatitis Group Patch Test Results: 2017–2018 by
Joel G. DeKoven, et al. in DERMATITIS, Volume 32, Issue 2, March/April 2021, pp 111 – 123.

In summary, from the table above it can be seen that TRUE Test of 35 haptens comprises just 21 of the 32 haptens (66%) in the European Baseline Series 2023, therefore 11 haptens (34%) are missing. Notable absences from TRUE Test compared to the basic EBS 2023 are:

- Fragrance mix II
- Lyral
- Dye mix
- Decyl glucoside
- Propolis
- Sesquiterpene lactone mix
- N-isopropyl-N-phenyl-4-phenylaminediamine / IPPD
- 2-Hysroxyethyl methacrylate
- Sodium metabisulphite (new addition to the EBS 2023)
- Benzisothiazolinone / BIT (new addition to the EBS 2023)

The corresponding figure for the Extended EBS 2023 is 23 haptens are present in TRUE Test compared to the 42 haptens of the Extended EBS 2023; so just 55% concurrence between TRUE Test and the Extended EBS 2023. TRUE Test does not include the following haptens of significance compared to the Extended EBS 2023:

- Compositae mix
- 2-n-Octyl-4-isothiozolin-3-one
- Linalool hydroperoxide
- Limonene hydroperoxide
- Sorbitan sesquioleate
- Sorbitan monooleate

Conversely, TRUE Test includes 15 haptens (47%) not present in the EBS 2023 and 13 haptens (41%) not included in even the Extended EBS 2023. These haptens have over the years become clinically less important and have therefore been displaced from the EBS and replaced by emerging more important haptens or haptens of special interest for surveillance. However, it is not that simple, as some of these “missing” haptens could be considered to be clinically important by virtue of the CAMP rank and their SPIN Score/Rank, for example QUATERNIUM 15 (which has just now been omitted from the EBS) and Carba mix and Parthenolide.

As a conclusion, it can justifiably be stated that TRUE Test continues to be a very valuable and useful diagnostic tool in certain circumstances; for the low-volume patch tester, where clinic staff are unavailable or overwhelmed, and where costs are of lesser importance.
Nevertheless, with the latest versions of the EBS and Extended EBS, TRUE Test has once again diverged just another step further away from the current European Baseline Series, and its relevance as a general screening patch test must therefore be questioned.

Dear Reader, if you have any particular article or book or website that you would like to have reviewed in a future issue of The Patch Tester, then please contact the Editor here.

New Patch Test Unit

Exactly one year ago, in March 2022, in The Patch Tester issue number 10, was an Advertorial on Patch Test Chambers. **Click here to access this previous article, as an introduction to the information below.**

Introduction to Patch Test Chambers
Chemotechnique is one of only two global-scale and globally represented manufacturers of patch test chambers, though there are several other national manufacturers who may extend the sales of their patch test chambers into a few other countries.

Each manufacturer has their own design and construction and presentation of their commercial chamber strip products, and each type will have features & benefits, advantages & disadvantages compared to other chamber strips, including those from other manufacturers.

It is often a very subjective choice, by the Dermatologist or by the dermatology Nurse, of which manufacturers' chamber strip is used. The choice of patch test system in a clinic is often based on experience, clinic tradition, personal habit, and economy. The choice of which manufacturer and product to use for the chambers may be entirely different from the choice of the manufacturer of the patch test haptens.

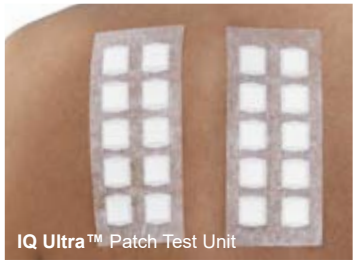
Brand Name	Manufacturer
IQ Ultra™	Chemotechnique MB Diagnostics AB
IQ Ultimate™	Chemotechnique MB Diagnostics AB
BasIQ Ultra™	Chemotechnique MB Diagnostics AB
AllergEAZE®	SmartPractice (originally produced by HAL Allergy BV)
AllergEAZE® Clear	SmartPractice
Finn Chambers®	SmartPractice (originally produced by Epitest Ltd Oy)
Finn Chambers® AQUA	SmartPractice
TRUE® Test	SmartPractice (originally produced by Pharmacia)
Van der Bend™	Van der Bend
Curatest®	Lohman & Rauscher

For Chemotechnique this latest generation patch test system is the "BasIQ Ultra" chamber product that was launched in February 2023.

The BasIQ Ultra™ is a Patch Test Unit specially suited for smaller clinics that do not preload haptens prior to patient appointments or for clinics used to open type Patch Test Units eager to experience the superior IQ experience.

By removing the cover plate the BasIQ Ultra™ has a smaller environmental impact due to less waste produced and the smaller physical footprint of the unit itself results in less materials used for product packaging. The removal also removes the need of an Application Device™ for hapten loading. To facilitate hapten placement a visual guide is included in the BasIQ Ultra™ product package.
Preloading set aside, the BasIQ Ultra shares all features found in the acclaimed IQ Ultra™ Patch Test Unit.

Chemotechnique IQ Chambers
The IQ chamber is the result of many years of product development and is most technologically advanced. The laminated tape/foam/filter paper construction results in a comfortable chamber providing a unique closed-cell system which defines a test area and helps prevent leakage. The quadrate shape allows for easy differentiation between allergic and irritant reactions. This patented patch test chamber design is found in **IQ Ultra™**, **IQ Ultimate™** and **BasIQ Ultra™** Patch Test Units. The integrated filter papers make handling of loose filter papers redundant.



Quantity
100 Test Units
Unit size (mm)
52 x 118 mm
IQ Chambers/ Unit
10 pcs
Rec.dose/ IQ Chamber
25 µl

IQ Ultra™
IQ Ultra™ is the comfortable and reliable Patch Test Unit choice for the aid of diagnosis of contact allergy. The preloadable IQ Ultra™ features the acclaimed IQ Chambers mounted on hypoallergenic premium quality carrier tape.

BasIQ Ultra™
Quantity
50 Test Units
Unit size (mm)
52 x 125 mm
IQ Chambers/ Unit
10 pcs
Rec.dose/ IQ Chamber
25 µl

BasIQ Ultra™
BasIQ Ultra™ is a Patch Test Unit especially suited for smaller clinics that do not preload haptens prior to patient appointments or for clinics accustomed to open type Patch Test Units that want to experience the superior IQ experience.

IQ Ultimate™
Quantity
100 Test Units
Unit size (mm)
52 x 118 mm
IQ Chambers/ Unit
10 pcs
Rec.dose/ IQ Chamber
25 µl

IQ Ultimate™
IQ Ultimate™ is the elastic and water resistant Patch Test Unit choice for the aid of diagnosis of contact allergy in active patients. The preloadable IQ Ultimate™ features the acclaimed IQ Chambers mounted on hypoallergenic flexible carrier tape with superior adhesion.

	BasIQ Ultra™	IQ Ultra™	IQ Ultimate™
IQ Chambers	Yes	Yes	Yes
Aluminium presence	No	No	No
Plastic Cover Plate	**No**	Yes	Yes
Pre-loading of Haptens	**No**	Yes	Yes
Hypoallergenic Tape	Yes	Yes	Yes
Water Resistant	No	No	**Yes**
Highly Elasticated	No	No	**Yes**
Product Code	BIQ-U	IQ-U	IQ-UL

The 2023 Product & Reference Manual

The new 2023 Catalogue and Reference Manual from Chemotechnique follows the same format as previous years, so the reader can easily find the required information.

There are two major changes from the previous 2022 edition:

1. The new Chemotechnique BasIQ Chamber, as detailed on pages 9 to 11

2. The new European Baseline Series as detailed on pages 26 to 28.

There are also Catalogue Amendments and Hapten series Amendments as detailed on pages 206 and 207 of this 2023 Catalogue.

Click on the pic to download the 2023 catalogue as a PDF file.

Sorbitan Sequioleate

Sorbitan sesquioleate (SSO) is a sorbitan-based fatty acid ester compound.

Its purpose is as an emulsifier or dispersant; that is to distribute different chemicals evenly throughout a preparation.

SSO is commonly used in cosmetic products, topical medical preparation such as topical corticosteroids…… and some patch test preparations!!

In some patch test preparations, SSO is used not only to improve the mixing of different chemicals such as in various mixes like Fragrance mix I and Balsam of Peru/Myroxylon pereirae, but also in some single-chemical test preparations. See the table below for a list of the various patch test haptens produced by Chemotechnique of Sweden and by SmartPractice of USA.

#	SSO	Hapten	Veh.	%	Manf.
1	5%	Ethyleneurea, melamine formaldehyde mix	Pet.	5%	Chemo
2		Ethyleneurea, melamine formaldehyde mix	Pet.	1%	SP
3		Evernia furfuracea (tree moss) extract	Pet.	1%	Chemo
4		Evernia prunastri (oakmoss) extract	Pet.	2%	Chemo
5		Fragrance mix I	Pet.	8%	Chemo
6		Fragrance mix I	Pet.	8%	SP
7		Glutaraldehyde	Pet.	0.5%	Chemo
8		Glutaraldehyde	Pet.	0.2%	Chemo
9		Myroxylon pereirae resin	Pet.	25.0%	Chemo
10	2%	Decyl glucoside	Pet.	5%	Chemo
11	1%	Alpha-amyl cinnamic aldehyde	Pet.	1%	SP
12		Cinnamic aldehyde	Pet.	1%	SP
13		DMDM hydantoin	Pet.	1%	Chemo
14		Formaldehyde,	Pet.	1%	Chemo
15		Hydroxycitronellal	Pet.	1%	SP
16		2-Hydroxyethyl methacrylate	Pet.	2%	Chemo
17		Isoeugenol	Pet.	1%	SP
18		Melamine formaldehyde	Pet.	7%	Chemo
19		MI+MCI	Pet.	0.01%	Chemo

Key:
SSO = sorbitan sesquioleate.
Chemo = Chemotechnique MB Diagnostics AB, Vellinge, Sweden.
SP = SmartPractice Canada, Calgary, Canada & SmartPractice Europe GmbH, Barsbüttel, Germany.
Information from info@smartpracticecanada.com and www.chemotechnique.se, September 2022.

Patch Test Hapten from Chemotechnique

Art no	Name	Conc.	Veh.
S-005	SORBITAN SESQUIOLEATE	20.0%	pet

As reported in the publication by Thanisorn Sukakul et al in CONTACT DERMATITIS, reported elsewhere in this edition of The Patch Tester, the sensitisation rate of SSO in consecutive patch tested patients is around 0.5%, so is a rather rare event. Several studies in Europe and USA have found varying prevalence rates, from 0.4% up to 10% in one tested population.

De Groot et al published in 2019 their review of frequency rates. In Denmark, in the period 2010 to 2014, 4,637 patients were tested at one centre with SSO 20% pet., and there were nine (0.2%) positive reactions. The German Contact Dermatitis Research Group (DKG) included SSO 20% pet. in their German Baseline Series in September 2015, and there were 0.8% positive reactions in 2016, 0.9% in 2017, and 0.6% in 2018; the average for this 3-year period was 0.8% (203/25,752).

In Belgium, in 2002 to 2011, 77 of 5,284 routinely tested patients had positive reactions to SSO 20% pet., that is, 1.5%. Before that period, in the same country, two studies from different centres had reported 2.9% and 5.2% positive reactions to SSO in routine testing in the second half of the 1990s. In 1995, an EECDRG study reported a 0.7% prevalence of positive reactions to SSO. In older European studies, prevalences ranged from 0.2% to 0.7%. In The Netherlands, 9 of 339 children (2.7%) routinely tested with SSO 20% had positive patch test reactions to the emulsifier.

In the United States, in two studies from the same centre performed in the periods 2006 to 2007 and 2008 to 2010, high prevalences of 10.7% positive reactions in a very small series of 112 consecutive patients and 3.9% positive reactions were observed, respectively. The frequency of 10.7% positive reactions seems excessively high, although all patients were reported as using products containing “sorbitan derivatives or sorbitol”, mostly in topical corticosteroid or antifungal preparations. In China, in 2014, 481 healthy student volunteers were patch tested with SSO 20% pet., and 2.3% had positive reactions (2.7% in men; 1.5% in women).

From these data, the authors concluded that there are insufficient data in European countries to decide whether inclusion of SSO in the European baseline series is justified, based on the primary criterion of a frequency of sensitisation exceeding 0.5% to 1%. However, the 1.5% positive reactions to SSO in Belgium warranted its inclusion in 2018 and also inclusion by the German DKG baseline series in 2015.

For comparison, several haptens that have been present in the baseline series for decades show comparable frequencies of sensitisation, namely, Mercapto mix, esquiterpene lactone mix, p-tert-butylphenolformaldehyde resin, N-iso- propyl-N0 -phenyl-p-phenylenediamine, Paraben mix. In fact, there are haptens still in many baseline series that have even lower prevalences, such as Primin, Clioquinol, and Benzocaine.

There are also data on the rates of positivity to SSO in patients who have tested positive to Fragrance mix I.

In a retrospective study from the IVDK, in the period 1998 to 2013, 2,952 FM I-positive patients had full breakdown tests in a second patch test round with its eight ingredients (all 1% pet. and containing 1% SSO) and SSO 20% pet. Among these, 154 (5.2%) had positive reactions to SSO 20% pet.

Positive reactions to one or more of the single fragrances contained in the mix were significantly more common (83% vs 57%) in SSO-positive patients, who also had more multiple reactions than FM I-positive patients with negative SSO results (62% vs 21% patients with reactions to two or more fragrances). The authors concluded that contact allergy to SSO markedly affects reactivity to FM I and its ingredients.

The most convincing evidence for the role of SSO allergy in positive reactions to FM I is from the UK study by Orton and Shaw who found that 12 of 14 (86%) SSO-positive individuals had negative results with all eight ingredients not containing SSO, indicating that the large majority of the reactions to FM I in SSO-positive patients were, in fact, caused by SSO and did not indicate contact allergy to one or more of its fragrance ingredients.

The use of SSO by the manufacturers in some patch test preparations may not only invoke a positive patch test result to the test substance because it contains SSO but may also affect the patch test results because SSO can increase the skin permeability of an unknown number and identity of test substances and therefore may enhance the intensity of these reactions.

As long ago as 1995, the prospective multicentre trial run by the European Environmental and Contact Dermatitis Research Group in 1995 recommended that SSO be included in the European standard series owing to its widespread use and its potential for sensitisation, “otherwise a positive reaction to Fragrance mix I cannot adequately be interpreted”. A similar argument holds true for the also-commonly occurring positive reactions to Myroxylon pereirae resin. So, 28 years ago, the risks and complications caused by the use of SSO in patch test preparations were known. At that time, researchers Orton & Shaw recommended that all patients tested with the fragrance mix should have concomitant testing with SSO, even if the breakdown of the mix is not applied. Furthermore, one should interpret the breakdown results in light of the current inclusion of SSO in some individual constituents.

The risks and complications caused by the use of SSO in patch test preparations were well-known to the manufacturers of patch test preparations. Of course, the manufacturers are very well aware of the disadvantages of using SSO as an emulsifier in these patch test preparations, so whilst some patch test preparations such as Compositae mix have had SSO removed from the composition, some other patch test preparations still contain SSO as the manufacturers have not yet been able to find a suitable alternative dispersant/emulsifier.

The excellent article “Adding Sorbitan sesquioleate to the European Baseline Series: Necessary, reasonable or unavoidable?”, by Anton de Groot and colleagues, as published by CONTACT DERMATITIS 2019, Volume 81, pages 221-225 DOI:10.1111/cod.13332 summarises the situation succintly, and based on that summary they state recommendations for the future management of this thorny question:

Conclusions

1. Several researchers have, in the recent or more distant past, argued that SSO should be included in the baseline series; so far, this has not been implemented by the ESCD.

2. In some countries in Europe, such as Belgium and Germany, the prevalence of sensitization to SSO in routine testing is high enough to warrant its inclusion in the European baseline series, based on the criterion of a “frequency of sensitization exceeding 0.5%-1%”.

3. It has been well demonstrated that patients with contact allergy to SSO may react to FM I but are not allergic to fragrances.

4. When SSO is not tested, this situation may go unnoticed, a wrong diagnosis of fragrance allergy may result, and an unjustified advice to avoid fragrances and fragranced products will often be issued, which is not only sub-optimal patient care, but may, in fact harm, the patient; thus, testing with SSO in all patients is mandatory.

5. As it is well known that only a minority of FM I-positive patients will undergo a breakdown test with the ingredients and SSO, testing with SSO in all patients can be achieved only by adding it to the European Baseline Series.

6. Not testing with SSO may also result in misinterpretation of patch test reactions to MP and HEMA in the baseline series, as well as of those to several other haptens.

Recommendations

1. We suggest that the ESSCA considers starting a study into the prevalence of SSO sensitization in the participating European countries.

2. We encourage the ESCD to (re-)open the discussion on adding SSO to the European Baseline Series

3. We suggest that the manufacturers of commercial patch test materials investigate the possibilities of replacing SSO with a less allergenic or, preferably, non-allergenic emulsifier, or of developing production methods that do not require the use of emulsifiers.

4. We particularly request manufacturers of commercial patch test materials to make the eight ingredients of FM I SSO-free as soon as possible. Currently, even with breakdown testing, correct and definitive interpretation of the patch test results in SSO-positive individuals is impossible, as one ingredient (E. prunastri extract) of one manufacturer contains 5% SSO, and four ingredients of the other provider contain 1% to 5% SSO.

Contact Allergy to Metal in in Metal Workers: A systematic Review and Meta-analysis

By Farzad Alinaghi, et al
In CONTACT DERMATITIS, Volume 88, Issue 2, February 2023, pp-11.
*See **https://doi.org/10.1111/cod.14232***

Overall, there is a significantly greater prevalence of metal allergy to metal workers than is found in the general population, based on the number of metal workers attending patch test clinics in Europe compared to data on prevalence of metal allergy as stated in the ESSCA data. Whilst this conclusion might seem to be an obvious expectation, the reasons are not nearly so easy to identify.

The most important metals causing ACD are Nickel, Chromium, and Cobalt.

ESSCA data gives prevalence rates of metal allergy amongst patents attending patch test clinics with dermatitis (13,382 males) was 6.7% for Nickel, 4.4% for Chromium, and 3.9% for Cobalt.
In comparison, in the 29 studies evaluated by the authors of this paper, of which 24 were based in Europe, the prevalence rates were 11.0% for Nickel, 8.2% for Chromium, and 8.0% for Cobalt.

	Nickel	Chromium	Cobalt
ESSCA European Males with Dermatitis	6.7%	3.9%	5.4%
Unselected Metal Workers	7.6%	4.9%	5.2%
Metal Workers with Dermatitis	11.0%	8.0%	8.2%

As metalworkers make up a small but significant section of the public within which metal allergy is already documented then the actual metal allergy prevalence may be even lower in patients not involved with metalworking.

The repeated exposure by metal workers to these three metals depends to a great extent on the type of tasks the metal worker is performing, as well as the types of metals occurring in their workplace.

The use of metal working fluids (MWF) is a well-known cause of ACD, particularly for those metal workers involved with cutting metals, such as lathe operators, machinists, turners, etc.
Not surprisingly, used MWF were found to contain higher concentrations of the metals than fresh unused MWF. However, there is conflicting data as to whether it is not so much the chemicals per se that are causing the ACD, but the presence of metal ions in the MWF.

Another source of the Dermatitis is the leather gloves that are used by many metal workers, as the gloves themselves are produced from leather that has been treated with chromium as a tanning agent, and with cobalt as a drying agent during the production process.

Unfortunately, the approximately 30 studies were rather poor in specifying the type of metal work undertaken by the subjects, so it Is not possible to draw any hard and fast conclusions as to the specific tasks that are most at risk of sensitising the metalworker.

The investigation by Alinaghi et all reviews in greater detail the 29 previous studies, and extracts other interesting figures, but nevertheless is confounded by the comparatively poor-quality studies on this topic from over the years and geographical regions. For more in-depth information, the reader is therefore recommended to read the original article in CONTACT DERMATITIS.

The Use of Sorbitan Sesquioleate in patch test preparations and patch testing with the substance – What do our Results Mean?

By Thanisorn Sukakul, et al

In CONTACT DERMATITIS, Volume 88, Issue 2, February 2023, pp 134-138.
See ***https://doi.org/10.1111/cod.14239***

This study investigated the prevalence of sensitisation to Sorbitan Sesquioleate (SSO) in consecutive dermatitis patients, as well as identifying concomitant patch test reactions to commercially available fragrance and non-fragrance patch test preparations containing SSO. The ultimate purpose was to consider whether SSO should be included in patch test screening series, for various sets of circumstances.

Hitherto, a patch test for SSO (20% in petrolatum) has been shown to be useful in leg ulcer patients or suspected contact allergy to cosmetics, but it is nevertheless still controversial as to whether or not SSO should be included in a broad-spectrum hapten screening panel, or when positive patch test results are obtained for those commercially available patch test haptens which are known to contain SSO, such as fragrance mixes and other mixes and some other haptens. ’

The authors studied 3,539 consecutive patch tested patients over 5 years to 2020 at Malmö Department of Occupational and Environmental Dermatology. They found a low prevalence rate of sensitivity to SSO of just 0.48%, with another 1.3% of doubtful reactions and just 2 patients showed an irritant reaction to SSO. They therefore recommended that the inclusion of SSO in a screening series was not warranted. However, just 3 months after this paper was first published, the European Baseline Series changed and then included SSO in its Extended EBS panel. The Extended EBS therefore joins the American Core Series of the American Contact Dermatitis Society and the German Baseline Series of the German Contact Dermatitis Research Group (DKG) in including SSO in their test panels. The inclusion of not only SSO but also its associated hapten Sorbitan monooleate in the more widely used Extended EBS screening series will doubtless provide much useful diagnostic information over the coming years of the rate of positivity and therefore also of the clinical significance of sensitivity to SSO, as well as its interference effect on the tests of other haptens.

This positivity rate of 0.48% is in line with previous studies showing 0.2% to 1.5%, though there have been higher values stated in research studies outside Europe.

In comparison to the 0.48% rate of positivity to SS, the corresponding values for Myroxylon pereirae Balsam of Peru was 250 of 3,539 (7.1%), for FM1 was 221/3539 (6.2%) and for Oakmoss Extract was 77/3539 (2.2%).

Of the 17 positive reactions to SSO, 16 of the patients showed a positive result on the first reading at D3 or D4.

The investigators found that the pattern of patch test reactivity for AD patients differed as doubtful and positive reactions were overrepresented. This indicates a possible association between AD and patch test reactions to SSO 20% in pet. If so, then there may be several explanations for this finding:

1. Degree of exposure: AD patients might be sensitised to SSO in topical corticosteroid medication or moisturising creams, which they are recommended to use to avoid dry skin.
2. Individuals with AD have a known impaired skin barrier and therefore may be prone to sensitisation to SSO, which is otherwise considered to be a weak allergen.
3. As the patch test dose has not been systematically investigated, another reason might be that the present test concentration of SSO is too high, and thereby irritating the skin of AD patients. Thus, the present SSO dose (20% in petrolatum) could give rise to doubtful reactions and false positive reactions defined as irritant reactions with a morphology indistinguishable from an allergic patch test reaction. It might therefore be interesting to study the possible irritative properties of SSO in AD patients and, particularly its effect on the penetration of other allergens when the test preparations contain SSO.

Several patients had a weak positive reaction to SSO without simultaneous positive reactions to FM I, BOP and oakmoss extract. This could be explained by the SSO concentration in the mixture of allergens being lower than in the test preparation with SSO. In comparison, patients with a stronger reaction to SSO-alone were more likely to have simultaneous reactions to either FM I, BOP or oakmoss extract. Due to their strong reactivity to SSO, they would likely react positively to SSO at the lower concentration contained in several mixes. Mixing SSO into the preparations might also affect the patch test results because SSO can increase the skin permeability of the test substances and may enhance the intensity of reactions.

The study concluded that sensitivity to SSO did indeed affect the results of patch tests to those commercial preparations that contained SSO, and so they recommend that another emulsifying agent without sensitising properties be found by the patch test hapten manufacturers to substitute the problematical SSO.

Nickel Allergy is associated with a broad-spectrum Cytokine Response

By N P J DeGraaf, et al.
In CONTACT DERMATITIS, Volume 88, Issue 1, January 2023, pp 10-17.
*See **https://doi.org/10.1111/cod.14199***

It Is not very often that researchers are able to report an alternative to the common-or-garden patch test to identify patients with sensitivity to a contact allergen, but this Amsterdam-based group are now reporting on the use of cytokine measurements to identify nickel sensitised patients with a new bio-marker test other than the lymphocyte proliferation test (commercialised as the MELISA Assay).

The purpose of this study was two-fold:

1. To determine the cytokine profile specific for nickel sensitivity and thereby reveal the pathogenesis of nickel induced ACD.
2. Identify potential new biomarkers for nickel sensitivity.

The authors concede that the gold standard in diagnosing nickel contact allergy is the patch test. However, this test is particularly suited for ACD, not for complaints due to internal exposure from medical implants and oral exposure from dental devices. Irritant reactions my cause false positive results, while insufficient allergen skin penetration may lead to a false negative result. Furthermore, there is a small risk of patient sensitisation.

The Lymphocyte Proliferation Test can also be used to identify nickel sensitisation, and this technique has been commercialised with the MELISA assay. Such an optimised LPT can also be considered as a good diagnostic tool for nickel allergy, though it is practically greatly limited by the international availability of the MELISA assay and its high cost, particularly in comparison with the very low material cost of an in vivo patch test. In vitro cytokine production has also previously been shown to be able to differentiate between nickel-allergic patents and those not sensitised to nickel.

The MELISA assay has been the subject of a review by The Patch Tester in the issue # 13 of January 2023.

Nickel allergy is a type IV hypersensitivity reaction; whereupon there is interaction of nickel ions with antigen presenting cells so that nickel-specific CD4+ T-cells are primed and activated. Nickel is also capable of directly activating dendritic cells via Toll-like receptor-4, thereby inducing inflammatory signalling via NF-B.

Cytokine production in vitro has also previously been shown to be able to differentiate between nickel-allergic patents and those not sensitised to nickel. Previous investigations have looked at pro-inflammatory cytokines such as IFN-gamma, IL-2, Il-12, IL-4, IL-5, IL-8 and regulatory cytokines such as IL-10 and TGF-alpha. In those studies, production of ‘type 2’ cytokines IL-2, IL-13 and IL-5

showed the best correlation with contact allergy to nickel.
The investigator sin this study seem to be the first who have evaluated a multiplex test system looking not just at one or a few cytokines but at a range of 33 different cytokines. This broad panel of tests will provide a better understanding of the inflammatory process with nickel sensitisation, and that may in turn assist in the development of markers for sensitivity to other metals that are less easy to diagnose through conventional in vivo patch testing; for example, titanium.

In this Amsterdam-based study, 52 patients with suspected cutaneous nickel sensitivity were evaluated with at least the European Baseline Series, including of course nickel sulphate, and with their cytokine profile. Of the 52 patients, 27 gave a positive patch test to nickel. The sensitivity of the patch test for nickel was, after these in vitro analyses, shown to be 67% and the specificity 68%. The Lymphocyte Cytokine Production Test (LCPT) is a complex procedure with specialised equipment, materials and skills, and 7 days of processing, that results in a cell concentration of 7.5 x 105 cells/ml/well.

The results of the cytokine tests were analysed and gave several clear indications, including most importantly, that the best biomarker for nickel ACD remains the in vitro production of IL-5.
The authors state that the Lymphocyte Proliferation Test (LPT) and the Lymphocyte Cytokine Production Test (LCPT) are both more accurate than the patch test for this subgroup of patients when nickel allergic contact history is used as a reference.

The fundamental problem for the use of the LCPT in clinical routine remains the availability and cost and equipment and expertise required for this complex LCPT test procedure, especially compared to the availability and cost of a simple patch test.

For further information on the LCPT procedure and details of the test results, please read the original article in CONTACT DERMATITIS.

Patch Test Results in a Dutch Paediatric Population with suspected ACD: A Retrospective Cohort Study

By Lizan Barwari, et al.
In CONTACT DERMATITIS, Volume 88, Issue 2, February 2023, pp 120-128.
*See **https://doi.org/10.1111/cod.14231***

In addition, numerous studies have shown that there are significant differences between problem haptens for children compared to adults, with higher rates of sensitisation in children compared to adults of Compositae mix, and metal haptens, whilst showing reduced sensitisation rates to preservatives and perfumes.

Continuous identification of emerging allergens/haptens is of course of great importance for the development of ever-more effective screening series and specialised series. However, this is confounded in paediatric populations by the reduced area of the test sites available for patch testing children, so that testing with the European Baseline Series (32with a limited number of haptens relevant for that age group. haptens of the EBS or 42 haptens of the Extended EBS) might be challenging enough without adding the burden of other specialised test series. Therefore, it is proposed that children would benefit from the creation of a dedicated Paediatric Baseline Series.

The purpose of the study by Barwari et al was to determine the frequency of positivity to contact allergens (haptens) and the identification of relevant haptens, in a population of paediatric patients attending the Amsterdam University Medical Centre Dermatology Department during 7 years from 2015 to 2021.

Screening with the EBS and additional series of the 439 patients showed 76% (334 patients) with one or more positive patch test reactions, and 39% (172 patents) showed one or more relevant positive patch test reactions. By inference, 36.9% (162 patients) therefore showed positive patch reactions which were deemed to be not clinically relevant. That means almost half the positive patch test reactions were considered to be not clinically relevant.

Of the total of 334 patients testing positive, only 84 (25.1%) would have been identified by the EBS alone. Similarly, 31 patients (9.3%) would have been identified by the additional series alone. If additional series had not been tested, then 20% of patients would have been missed. This is in accordance with a Turkish study which found 25% and an American study found 23.6%.

For example, if patients had not been tested for linalool and limonene hydroperoxides then 5% of patients would have been missed. Another study has shown that 55% of paediatric patients who tested positive for either of these haptens were not sensitised to other fragrances. Both these figures motivate for the inclusion of these two haptens in any paediatric screening series.
When considering the number of positive patch test reactions (rather than the number of patients), then of the 858 positive patch test reactions, 16.8% (144 reactions) relevant reactions would have been missed when testing the EBS only. In total, 20.3% (89 patients) would have been underdiagnosed if the additional series had not been tested.

There was a change during this period of 2015 to 2021 compared to the period 1996 to 2013 in the rates of sensitisation for several groups of haptens, with metal haptens, isothiazolinones, MDBDG, Carba mix, Amerchol L101 and Benzophenone 4 showing increased rates of sensitisation. In total there was shown to be significantly more ACD diagnosed in the patient group of 2015-2021 compared to the patients in a separate study on the years of 1996 to 2013 with 76.1% compared to 46%. In contrast there was shown to be a significant decrease in the frequency rates for corticosteroids (budesonide and tixocortol-17-pivalate) thiomersal, propyl gallate and thiuram mix, which could therefore be dropped from a paediatric testing panel of haptens.

There was a change in the sensitisation rates for various significant haptens between children and adolescents, with the following haptens being more prevalent in children compared to adolescents:

- Nickel sulphate
- Cobalt chloride
- Lanolin
- Colophonium
- Ethylenediamine dihydrochloride
- Amerchol L101.

Of the haptens tested, the usual culprits figured strongly, but there were also some more-or-less surprising names showing up:

In the EBS were the following haptens:

- Nickel sulphate = 20.3%
- Cobalt chloride = 15.5%
- Potassium dichromate = 11.2%
- Fragrance mix I = 10%
- MI = 8.4%
- MI/MCI = 7.3%
- Lanolin Alcohol = 6.6%

In the additional series were the following haptens:

- Cocamidopropyl betaine = 17.9%
- Amerchol L101 = 13.3%
- Benzophenone-4 = 9.5%

The authors particularly highlighted the importance of two highly significant haptens for the paediatric population; MI and MI/MCI and Benzophenone-4. Regarding MI and MI/MCI, remarkable differences in sensitization rates were observed for MI, MCI/MI, and methyldibromoglutaronitrile. compared to preceding data. MCI and MI have been widely used as preservatives in care products for children, such as baby wipes, creams, shampoos and moisturisers. Regulatory measures of the European commission that banned the use of MI in leave-on cosmetics and restricted its use to 15 ppm in rinse-off products became fully effective in 2018. Although a decrease in the global isothiazolinone epidemic following these measures has been described in several studies, paediatric patients continue to present with allergy to this sensitiser The largest increase was observed for MI. A sensitisation rate of 1.9% to 6% for MCI/MI has been described in other studies, including paediatric patients. The inclusion of MI in the EBS in 2019 as a separate test hapten may have contributed to this increase in documented sensitisation rates seen in the past decade. Furthermore, increasing the concentration from 500 ppm to 2000 ppm may have improved the detection rate for MI. In this study, testing with MCI/MI alone failed to detect MI allergy in 26 patients, so this study further confirms the importance of testing paediatric patients with both MI and MI/MCI separately for these most important sensitisers.

Regarding Benzophenone-4, this is considered to be an emerging contact allergen, that is commonly used in sunscreens and cosmetics as a chemical ultraviolet (UV) light absorber. The greater use of sunscreen products due to rising awareness of the carcinogenic effects of sun exposure, along with the increased use of UV filters in toiletries and hair care products, may explain the rising trend of sensitivity to this hapten that was observed in this study.

The study found no significant difference in the rate of positive patch test results in children with Allergic Dermatitis compared to those without AD, which is in alignment with some other European studies; however this topic remains controversial. Recent research has shown that patients with AD have higher rates of contact sensitisation (ACD) than patients without (36.9% vs. 26.4%). Nevertheless, patients with AD may still be predisposed to ACD due to the impaired barrier function of the skin, allowing for an increased risk of contact sensitization.

The same concentration of the haptens is generally believed to be most appropriate for paediatric patients compared to adult patients, though this may not have been critically evaluated to date.
The authors have in conclusion stated their recommendation for a Paediatric Test Series, designed for their circumstances in Amsterdam, of the following haptens shown in the table below. The selection of haptens by this Amsterdam-based group was based on the premise of haptens with greater than 2% positivity rate in their study.

#	Hapten name	Concentration	Art. No
1.	Nickel sulphate	5%	N-002
2.	Cocamidopropyl betaine	1% Aq	C-018
3.	Cobalt chloride	1%	C-017
4.	Amerchol L101	50%	A-004
5.	Potassium dichromate	0.5%	P-014
6.	Fragrance mix I	8%	Mx-07
7.	Benzophenone-4	10%	H-023
8.	MI	0.2% Aq	M-035
9.	MI/MCI	0.02% Aq	C-009
10.	3-(Dimethylamino)-propylamine	1% Aq	D-053
11.	Lanolin Alcohol	30%	W-001
12.	Linalool hydroxyperoxide	1%	H031A
13.	Carba mix	3%	Mx-06
14.	Myroxylon pereirae	25%	B-001
15.	Caine mix III	10%	Mx-19
16.	Fragrance mix II	14%	Mx-25
17.	Sorbitan sesquioleate	20%	S-005
18.	Limonene hydroxyperoxide	0.3%	H-032A
19.	Colophonium	20%	C-020
20.	Iodopropynyl butylcarbamate	0.1%	I-008
21.	N-isopropyl-N-phenyl-p-phenylenediamine	0.1%	I-004
22.	Octylisothiazolinone	0.1%	O-004
23.	Methyldibromoglutaronitrile	0.3%	D-049
24.	P-Phenylenediamine	1%	P-006

Various other groups, including the American Contact Dermatitis Society, have recommended rather different screening series for paediatric patients, with 38 haptens, as they maintain that 40 to 60 haptens can be placed on the back of a 6-year-old child.

Also, the EAACI Task Force Allergic Contact Dermatitis in Children has recently recommended a paediatric screening panel, which would however have missed 36.5% of this study's positive patients and underdiagnosed 61.1%.

In contrast, the above 24-hapten Paediatric Screening Series detected 87.1% of all positive patients in this study. Additional patch test haptens should always be considered in order to increase the diagnostic efficacy of patch testing paediatric patients as well as adults.
The reader is strongly encouraged to read the original article for more, useful information on test substances and their rats of sensitisation.

The Additive Value of Patch Testing non-commercial Test Substances and Patients own products in a clinic of Occupational Dermatology

By Kristiina Aalto-Korte, et al
In CONTACT DERMATITIS, Volume 88, Issue 2, February 2023, pp 27-34.
See ***https://doi.org/10.1111/cod.14191***

The Finnish Institute for Occupational Health has developed many years of experience and expertise in identifying workplace ACD caused by workplace exposure to potentially sensitising haptens. From this experience they have developed their own clinic-produced test panels of hapten substances, based on the occupation of the patient and their known exposures. These clinic-produced series are for epoxy chemicals, isocyanates, phenol-formaldehyde resins and metal-working fluids.

In addition, the FIOH may produce their own test substances for substances that may be available from the commercial manufacturers but at lower potency/concentration.

Every patient at FIOH that is diagnosed with Occupational ACD is tested with a baseline Series, plus a clinic-produced series customised for the occupation of the patient, plus the patient's own materials from their workplace.

During the period 2015 to 2019 a total of 544 patients were patch tested, with 353 (64.9%) diagnosed with OACD.

In 19 (3.5%) patients, the only clues to the diagnoses of OACD were positive reactions to workplace materials. The diagnosis of OACD was based on commercially unavailable test substances in 20 (3.7%) patients.

In 167 OACD cases diagnosed by commercial test substances, additional causes were found in 17 patients by testing patients' own and non-commercial test substances.
Positive reactions to workplace substances reinforced diagnoses based on commercial test substances In 7.9% (43) cases.

The overall additive value of testing with the patient's own products / materials / substances was 16.7% (91 cases).

If the study authors had used only the commercial test substances, they would have missed 18.9% (39 cases) of the total 206 OACD cases.
This article includes three very interesting tables, too complex and large to present in this brief review, in the following tables:

1. Cases of Occupational ACD diagnosed by patch testing using workplace materials.
2. Cases of Occupational ACD diagnosed by patch testing using clinic-produced test substances.
3. Cases of Occupational ACD diagnosed by patch testing using commercially available patch test haptens corresponding to workplace substances that tested positive.

Table 2 shows the non-commercial in-house test substances that have been developed by the Finnish Institute of Occupational Health based on their years of experience. The most prevalent hapten was Coco-amphoprionate, as found in the SensiSept H34 disinfectant hand-cleanser, which caused OACD amongst principally fast-food workers.

Other haptens identified by the FIOH were as follows:
- Capryl diethanolamine – cutting fluid
- FBAP & TMD & BDMA – All epoxy hardeners
- HDI-oligomers – polyurethane paint hardener
- Solvent orange – in a glove

The reader is strongly encouraged to read the original article for more, useful information on test substances and their workplace occurrence.

Presentations to Emergency Departments in Melbourne Australia diagnosed as ACD

By Kate Dear, et al.
In CONTACT DERMATITIS, Volume 88, Issue 2, February 2023, pp 145-149.
*See **https://doi.org/10.1111/cod.14230***

Some 4,900 chemicals have been identified as causing allergic contact dermatitis (ACD), which in some cases may be acute and severe, requiring emergency treatment.
Previous studies from other countries have shown that 2%–4% of emergency department (ED) presentations in Australia result from dermatological conditions, with the majority being triaged as low urgency.

The purpose of this retrospective study was to identify and quantify the prevalence of ACD amongst patients attending 14 different Emergency Departments in a large Australian city, Melbourne, and to investigate the different management of these patients when there was involvement of a Dermatologist in the diagnosis and treatment of these patients.

278 patients over a 12-month period in 2017/8 were diagnosed by the ED Physician with ACD.

The study threw up some interesting facts and numbers:

- Mean age of patients was 37 years
- Females accounted for 47%
- Background atopy present in 15%
- Mean duration of symptoms was 10 days
- Symptoms in order of prevalence: pruritis > swelling > pain > rash
- Signs in order of prevalence: erythema > oedema > papules > bullae > urticarial lesions
- Sites of symptoms in order of prevalence: face > arms > trunk > legs > hands
- In most cases, there were no investigations performed, including no patients sent for patch testing straight from the ED
- The Dermatology Department was involved in only 20% of cases, though phone advice and phone referrals were common
- The patient was advised to consult a Dermatologist in 8 of 186 (4%) cases, an Allergist in 6 cases3%), and a GP in 74 cases (40%).
- Admission to hospital in only 1 case, out of 278 patients (0.4%).
- Triggers in order of prevalence: no cause suggested > hair dye > personal care products > topical medicaments > household and occupational chemicals > medical devices and equipment > plants. However the lack of any patch testing data has inhibited a proven identification of the sensitising agents.
- It was apparent from the specified causes that cases of Irritant Contact Dermatitis (ICD) were misdiagnosed as Allergic Contact Dermatitis (ACD), which has important consequences for the optimal treatment and management of the patient.
- There were very significant differences in the treatment of the ACD patients depending on whether or not there was involvement of a Dermatologist by the ED practitioner.

The authors conclude that their study demonstrates the difficulty of ED Physicians recognising likely irritants as allergens and therefore diagnosing ACD clinically. Furthermore, the disparity in management of presumed or possible ACD between ED Physicians and Dermatologists is highlighted, particularly regarding the use of oral and topical corticosteroids. This study also demonstrates the need for improved awareness of the management of ACD, including referral to Dermatologists, including the use of Patch Tests, in order to make a definitive diagnosis. It is likely that improved education for ED Physicians regarding the common causes of ACD, its clinical presentation and its differentiation from ICD, would improve patient care

The Use of Carvone in consecutive Patch Testing

Johanna Endberg, et al.
In CONTACT DERMATITIS, Volume 88, Issue 2, February 2023, pp 206-211.
*See **https://doi.org/10.1111/cod.14249***

Carvone (l-carvone) is classified as a fragrance, of the cyclic terpene group. Limonene is chemically related to Carvone, and Carvone can be produced by oxidation of Limonene. It is also chemically related to Linalool. Carvone is better known as a mint-tasting flavour additive, and is the primary component of spearmint. Due to this flavour, it is a component of several products such as toothpaste, mouth wash, chewing gum, foods, beverages and even tobacco-products. However, although it is considered to be a weak allergen just because of the frequent exposure, it can become clinically significant as a sensitiser that can cause allergic contact reactions. Most persons are exposed repeatedly, almost on a daily basis, yet there has been little study of its potential importance as a sensitiser for ACD or other clinical conditions.

The authors therefore designed their study to retrospectively analyse the rates of positivity to Carvone in consecutively screened patients over a 5-year period and to determine if there were any notable features of carvone sensitivity such as concomitant sensitisation.

Of the 3,554 patients tested with carvone, 28 (0.79%) had a positive reaction.
The prevalence figure of 0.79% of this study was in accordance with other similar consecutive-patient studies from Europe and USA.

Carvone-positive patients had higher mean age (60 years vs 44 years), were significantly more likely female and (logically enough) had often an intraoral/lip site of sensitisation.
Areas of sensitisation were, in rank order:

Intraoral/lip > Face > Head > Neck > Upper extremity > Lower extremity > Trunk > Anogenital / groin.
The last site was somewhat intriguing, but it was postulated that this may be the result of excretion of Carvone or its metabolites or by-products in urine or faeces.

In the Carvone-positive group, 50% (n = 14) had a relevant reaction, and in 4 of 14, the relevance was not clinically suspected and was first revealed only after testing.
Of the carvone-positive patients, 18 of 28 did not have a coexisting allergy to a fragrance/flavour allergen and of these 44% had a relevant allergy.

Patch test reactions to haptens other than Carvone were found in 24 of the 28 patients with Carvone sensitivity, with Gold being the most positively correlated (39%). The correlation of these two haptens as sensitisers can only be speculated at present. 10 of the 28 Carvone-positive patients had concomitant positive reactions to other fragrances, with 5 of the 28 patients testing positive to hydroperoxides of Limonene. These results indicate that other fragrances or fragrance mixes are

not good markers for carvone sensitivity, and vice versa, though further studies with larger numbers would be needed to confirm these findings.
The study suggests that a significant fraction of relevant carvone contact allergies may be overlooked if the Carvone hapten is not tested directly.

The authors argued that even though the prevalence was below the threshold of 1%, then they would consider carvone for inclusion in the Swedish Baseline Series, though more studies were needed to confirm their results and the results of other researchers elsewhere, and to confirm the optimal test concentration.

You are invited to notify us If there is a website you would like to have reviewed in a future issue of The Patch Tester or if there is a society or other website that you would like to have included in these lists.

Dermatology Society Websites

ILDS:	*International League of Dermatology Societies*	www.ilds.org
ICDRG:	*International Contact Dermatitis Research Group*	www.icdrg.org
EADV:	*European Academy of Dermatology & Venerology*	www.eadv.org
ESCD:	*European Society of Contact Dermatitis*	www.escd.org
ACDS:	*American Contact Dermatitis Society*	www.contactderm.org
APEODS:	*Asia-Pacific Envmntl & Occupational Dermatology Society*	www.apeods.org
EAACI SAM:	*European Academy of Allergy & Clinical Immunology*	www.eaaci.org
BAD:	*British Association of Dermatology*	www.badannualmeeting.co.uk
AAD:	*American Academy of Dermatology*	www.aad.org
PDA:	*Pacific Dermatololologic Association*	www.pacificderm.org
APD:	*Association of Dermatology Professors*	www.dermatologyprofessors.org
NDA:	*Nordic Dermatology Association*	www.nordicdermatology.com
GDA:	*German Dermatology Society*	www.derma.de
FSA:	*French Society of Dermatology*	www.sfdermato.org
CDA:	*Caribbean Dermatology Association*	www.caribbeanderm.org
ACD:	*Australian College of Dermatologists*	www.dermcoll.edu.au
NZDS:	*New Zealand Dermatology Society*	www.nzdsi.org
DNA:	*Dermatology Nurses Association*	www.dnanurse.org
DermNET NZ:	*Dermatology Infomation Resource for Patients*	www.dermnetnz.org

Dermatology Meeting Websites

www.eadv.org
www.aad.org
www.dermatologymeeting.com
www.asiaderma.sg
www.dubaiderma.com
www.cairoderma.com

In this fourteenth issue of “The Patch Tester” we are taking a look at three different communication channels between Chemotechnique and the world of Patch Testers:

1. The “Patch Tester” website for the “Patch Tester” e-mag
2. The Chemotechnique Facebook page
3. The Chemotechnique Instagram channel

The Patch Tester website at www.patchtester.com is where Dermatologists of the world are invited to download the latest and previous editions of the Patch Tester e-mag. Now with this 14th edition, the e-mag has been in operation for soon four years, and continues to gain ever-more followers and readers. The most recent editions are shown first, with the older editions now relegated to a second page. Clicking on the front cover downloads the relevant edition. A new feature is that the Contents of each edition are listed. The edition can be either read live or can be downloaded for offline reading. Then it is the reader’s choice how to configure their computer or Mac or device to get the most benefit from reading the edition.

The website will continue to evolve as the e-mag also develops.

The website of the Caribbean region distributor AllerDerm Caribbean Ltd shows each of the editions of The Patch Tester e-mag, including the Contents pages, all on a single webpage for easy review.

Social media are an important communications channel for all manner of businesses, and Chemotechnique is no exception. Even though we are technically a manufacturer of medical products to be supplied solely to medical professionals, we are nonetheless all human enough to want to engage not only through the official channels of the corporate website and business emails, but also on a more personal level though more personal communication channels.

The Chemotechnique **Facebook page** is a frequently edited and updated ensemble of advertisements for new staff, congresses visits, announcements of events, personal anecdotes, messages, new publications of the “Patch Tester” e-mag, and great graphics, in English language and Swedish language.

Follow the page to keep up to date.

This can also be used as a Message channel direct to the company.

See https://www.facebook.com/chemotechnique

Chemotechnique is also very active in its **Instagram channel** with over 100 posts for viewing, from congress visits, meetings with Dermatologists and business colleagues from around the world, and publications of the Patch Tester e-mag, plus much more.

See https://www.instagram.com/chemotechnique/

Contact Dermatitis / Patch Testing

4th – 7th September 2024
16th ESCD
Dresden, Germany
https://escd.org/meetings-courses/

8-12th March 2024
AAD 2024
San Diego, USA
https://www.aad.org/member/meetings-education/am24

Dermatology - International

29th April–1st May 2023
5th Annual RAD Conference
Revolutionizing Atopic Dermatitis Conference
Washington, USA
https://revolutionizingad.com/conference/registration

3rd–6th May 2023
20th–23rd September 2023
Dermatology Week, Online Education Events
https://www.dermatologyweek.com/

27th–29th May 2023
ACD 2023, Australian College of Dermatology
ICC, Sydney, Australia
https://acdasm.com.au/

27th–29th June 2023
BAD, British Association of Dermatologists
ACC, Liverpool, England

3rd - 8th July 2023
ILDS WCD-2023, World Congress of Dermatology
Singapore
https://www.wcd2023singapore.org/

27th – 28th July 2023
23rd European Dermatology Congress
Paris, France
eurodermatology@europeanmeets.com

11th–14th October 2023
EADV 2023
European Academy of Dermatology and Venerology
Berlin, Germany
https://eadvcongress2023.org/

8th-12th March 2024
AAD 2024, American Academy of Dermatology
San Diego, USA
https://www.aad.org/member/meetings-education/am24

The webpage at www.waset.org/dermatology-conferences-in-2022 is one potentially very useful source of information of Dermatology congresses in 2023.

WASWT is the World Academy of Science, Engineering and Technology. Their webpage states numerous dermatology-related congresses and conferences for 2023.

A word of warning, as has been stated elsewhere in the dermatology world, we need to be aware of the possibility of wishful thinking, opportunism, obsolescent statements, and even misrepresentations or false advertising for congresses. See https://www.bad.org.uk/events/eventcalendar