Referee cases: what can they tell us about resilience in the food supply?

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Referee Analyst

& Head of the Office of the Government Chemist

13th June 2018

Science
for a safer world

Aim

- Rationale for technical appeal to the Government Chemist,
- Approach we take to cases and
- Review of cases since last conference, June 2016
- Conclusions

Appellate review

Civil & Criminal appeal

Well established in civil law from 17th century

Comparatively recent in common law criminal process

Criminal Appeal Act 1907

Protection against miscarriages of justice

Maintain consistency

Legitimacy and public confidence

Consumer Rights

to safety

to be informed

to choose

to be heard

to satisfaction of basic needs

to redress

to education

to a healthy environment

Marshall, P.D., 2011. A comparative analysis of the right to appeal. *Duke J. Comp. & Int'l L.*, 22, 1 - 46

Technical appeal to Government Chemist

Sale of Food & Drugs Act 1875

Trial at first instance - Petty Sessions (S. 20)

Appeal to the Quarter Sessions (S. 23)

Either court, at its own discretion, or upon request of prosecution or defence may refer the sample " … to the chemical officers … at Somerset House …" (S. 22)

Modern provisions

Food Safety Act 1990

Regulation (EU) 2017/625 on official controls

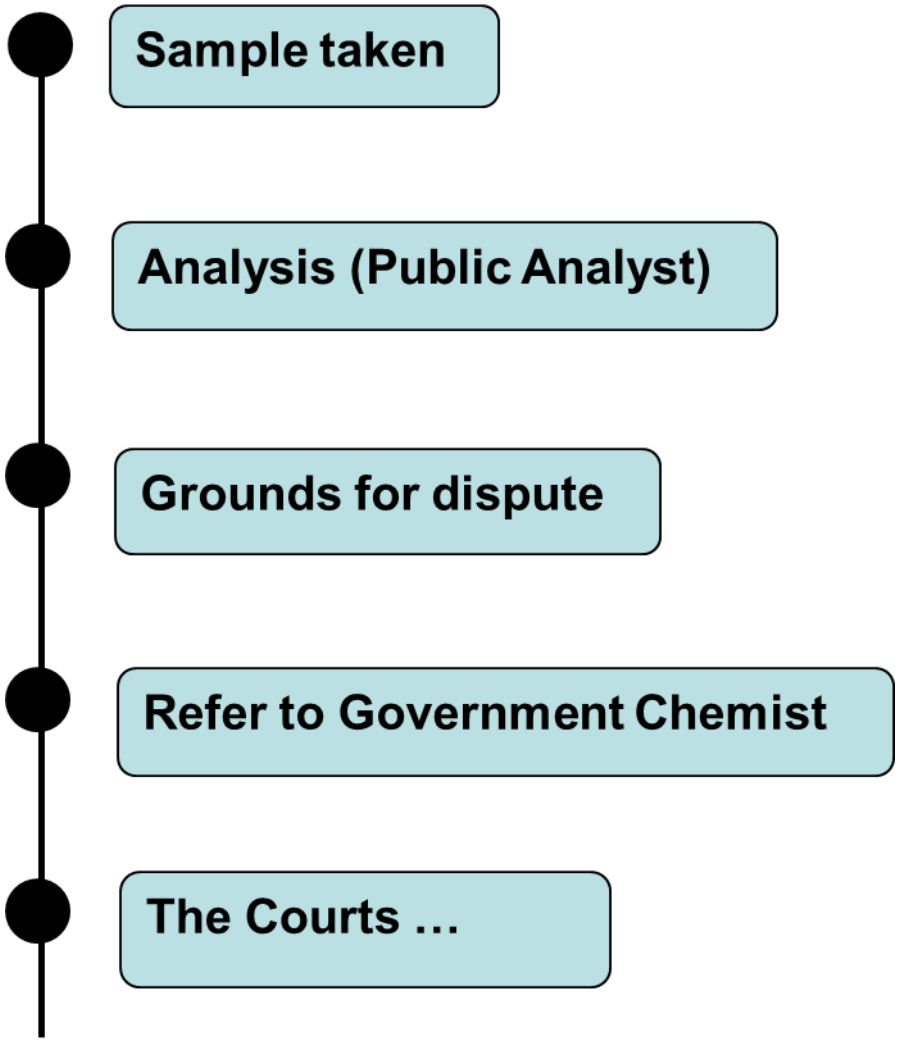
https://www.gov.uk/guidance/submit-a-referee-sample-to-the-government-chemist

https://www.gov.uk/guidance/submit-a-supplementary-expert-opinion-sample

Government Chemist acts:

As an independent referee analyst resolving disputes that occur in relation to certain legislation, and

As an advisor to the public sector and the wider analytical community, where there are measurement science implications of existing and proposed legislation and regulation.



Typical steps in referee case

1. Accept referral?
2. Funding
3. Schedule work
4. Check legislation
5. Identify method

6. Investigate Method
7. Replicates 3 x 3
8. CRMs, RMs spikes
9. Witnessed
10. Orthogonal confirmation if possible

11. Transcriptions checked
12. Results reviewed
13. New analytical runs if required

Interpretation and reporting

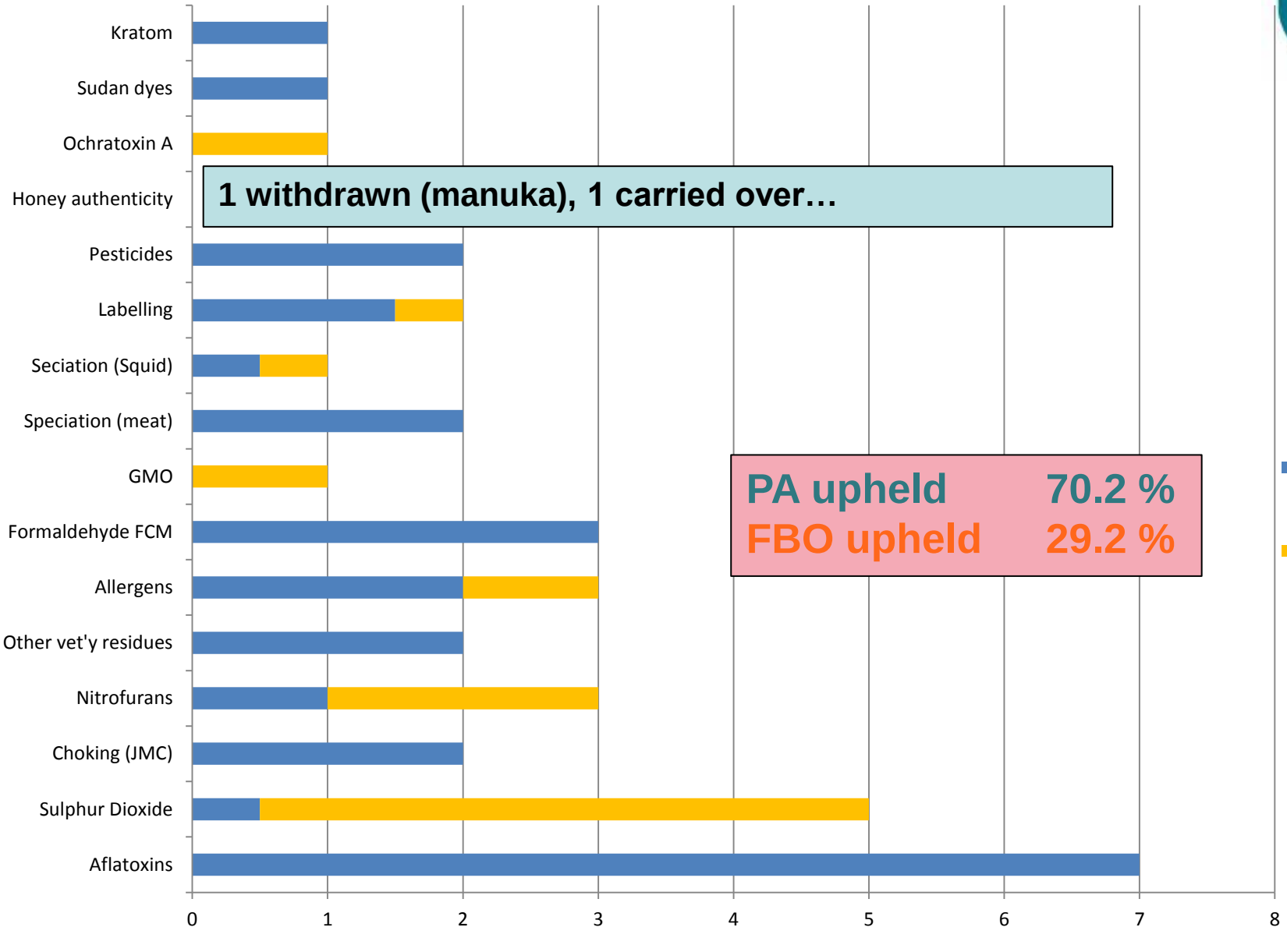
14. Statisticians review dataset
15. Certificate drafted
16. Reviewed
17. Data independently checked

18. Peer review
19. Report issued to all parties

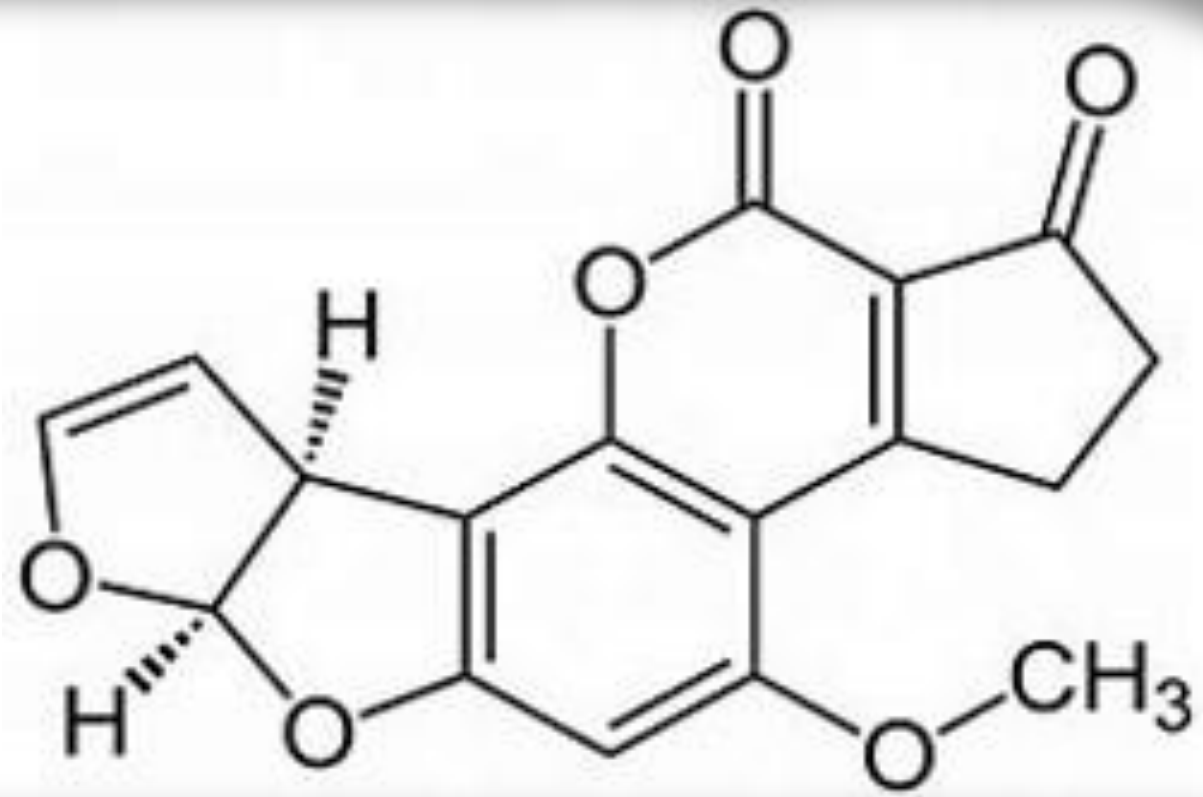
Casework relative resource

Casework relative resource

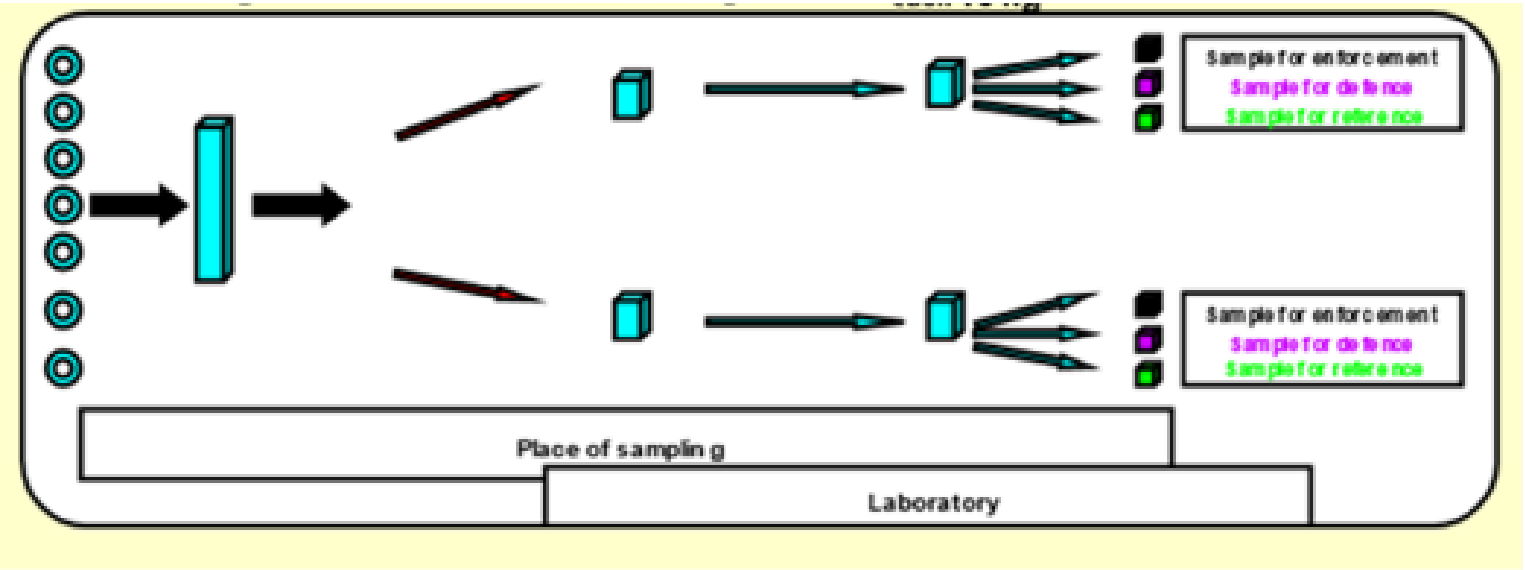
Cases in the 14/17 Programme



Case examples



Mycotoxin sampling & sample preparation

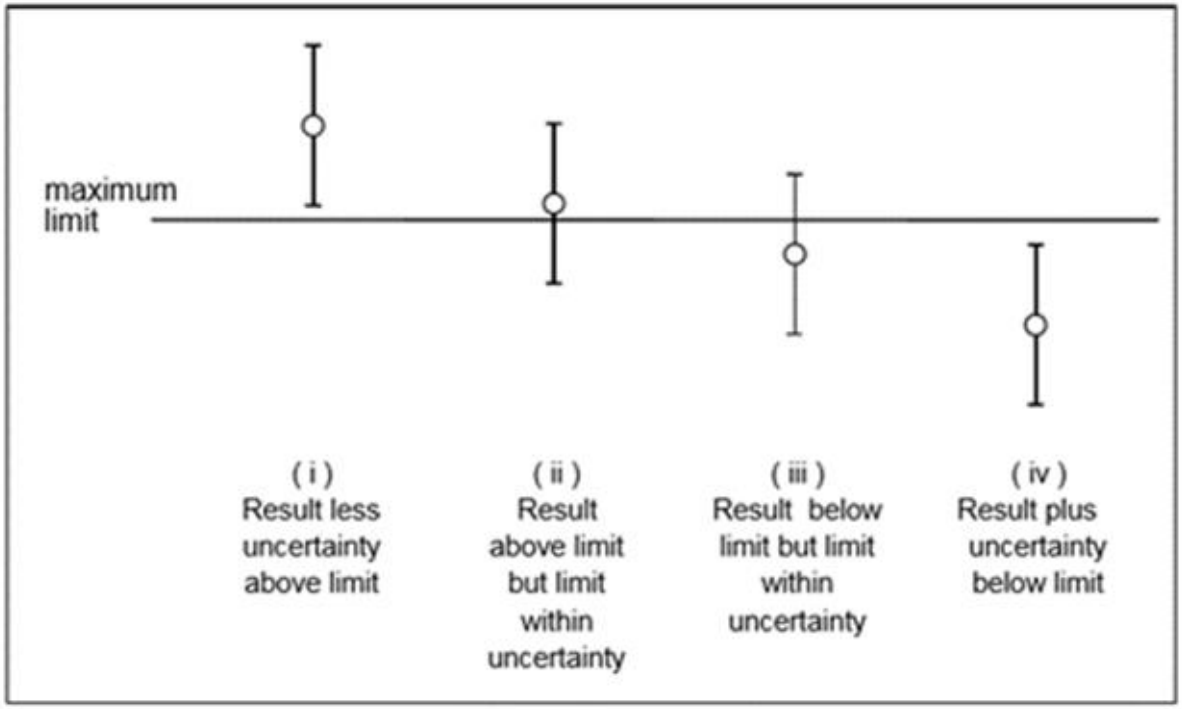


Walker, Colwell, Cowen, Ellison, Gray, Thorburn Burns et al., 2017, Aflatoxins in Groundnuts – Assessment of the Effectiveness of EU Sampling and UK Enforcement Sample Preparation Procedures, *J Assoc Public Analysts*, 45, 1 – 22

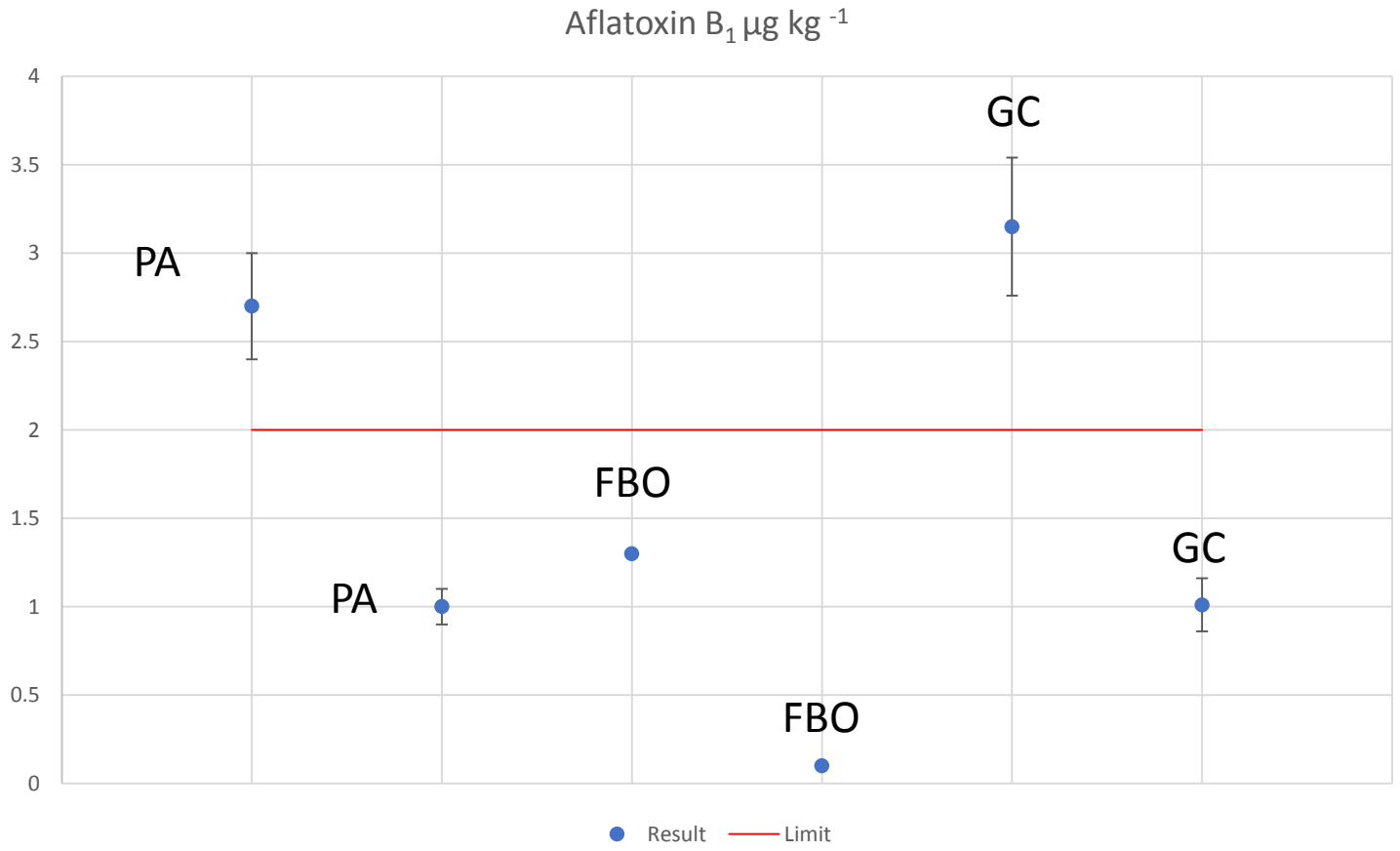
Guidance For Competent Authorities … Aflatoxins (2010) - https://ec.europa.eu/food/sites/food/files/safety/docs/cs_contaminants_catalogue_alfatoxins_guidance-2010_en.pdf

Mycotoxin analysis

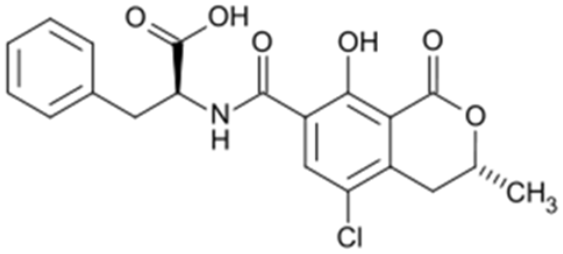
Results interpretation



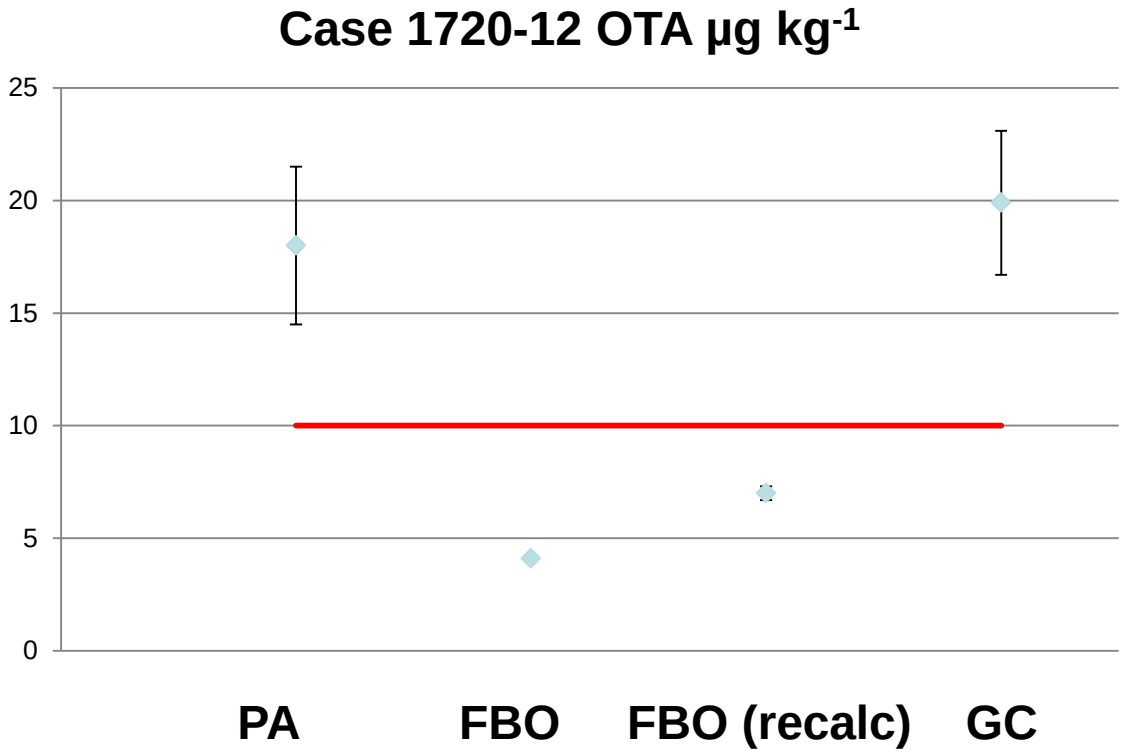
Case 1720 – 10 Aflatoxins, shelled groundnuts



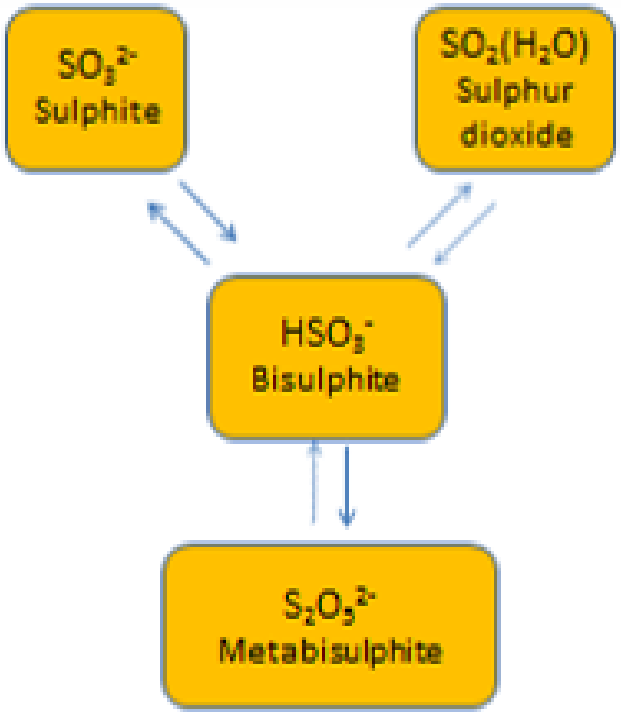
Case 1720-12 OTA



Characteristic renal pathologies, teratogenic in animal models, & causes damage to the liver, gut and lymphoid tissue



Case examples



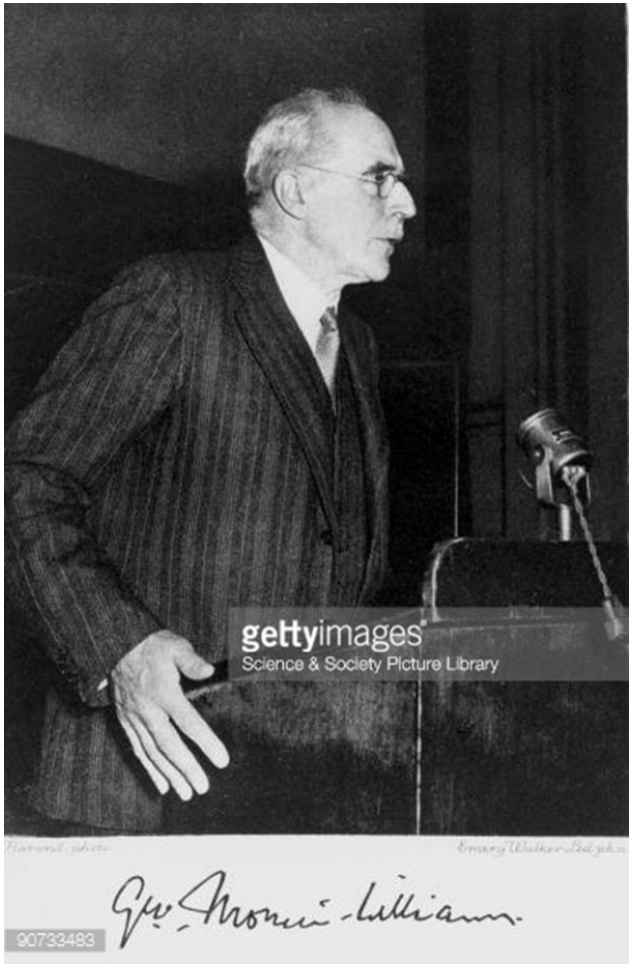
Sulphite sensitivity

- Severe, even life threatening asthmatic reactions in sensitive subjects
- Prevalence about 5 % in adult asthmatic population
- Sulphites can occur naturally in foods
- Very widely used, limits range from 10 to 2000 mg kg^{-1}
- Listed in Annex II to Reg. 1169/2011
- Acute risk management is disclosure
- Population risk management – limits
- RASFF 2017 dried apricots from Turkey 34 border rejections
- SO_2 2588 ± 690 mg kg^{-1} Range 2057 – 5968 mg kg^{-1}
- Regulation 669/2009

Simon, R. A. (1998), Update on sulfite sensitivity. Allergy, 53: 78–79
Vally, H. and Misso, N.L., 2012. Adverse reactions to the sulphite additives. Gastroenterology and hepatology from bed to bench, 5(1), p.16.
EFSA Journal 2014;12(11):3894

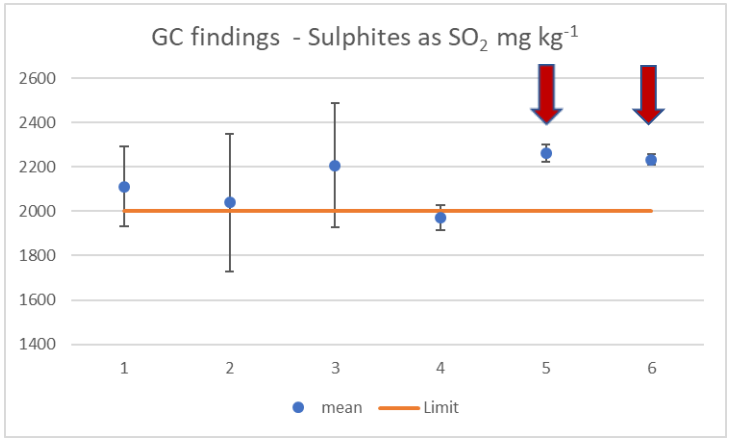
Sulphites

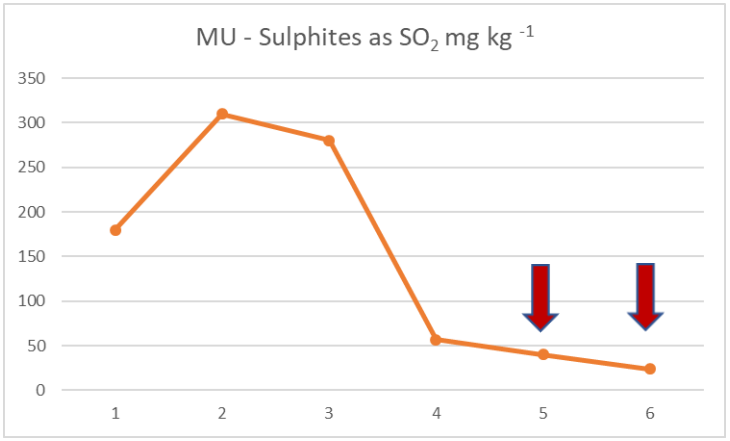
Gordon Wickham Monier-Williams OBE MC MA PhD FRIC (1881-1964)



Thorburn Burns & Walker, 2018, Gordon Wickham Monier-Williams (1881-1964): A major contributor to the improvement in quality and purity of foodstuffs via his professional influences and innovations in analytical chemistry, *in submission, J Assoc Public Analysts*.

Sulphites – dried apricots





HCHO

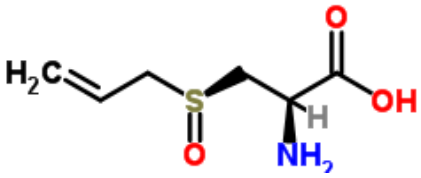
In aq. NH_4CH_3COO

Seaweed snacks – SO_2

- Seaweed processed and dried with added sesame seeds, dried garlic and soya
- Appeared to elicit a respiratory reaction in a sulphite sensitive individual
- 23 mg kg^{-1}, 34 mg kg^{-1} found – iodometric titration after distillation with $Cu(CH_3COO)_2$
- Second portions SO_2 < 10 mg kg^{-1}

Dried garlic competing reactions generate and destroy added SO_2

S-allyl-cysteine sulphoxide



3 Other S containing cpds

e.g. Allyl mercaptan

Alliin
cytoplasm

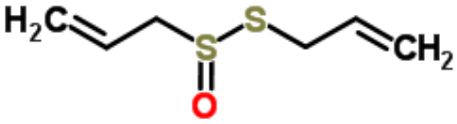
2

Thermal degradation in acidic conditions Monier-Williams

1

Alliinase
vacuole

When dried garlic wetted



Allicin

Allyl 2-propene thiosulphinate

SO_3^{2-}

Spontaneous degradation

S-allyl thiosulphate [??]

Volatile S cpds, *e.g. diallyl disulphide*

Added SO_2 destroyed

Lafeuille, *et al*. "Determination of added sulfites in dried garlic with a modified version of the optimized Monier-Williams method." *JAOAC Int* 90.4 (2007): 1090-1097

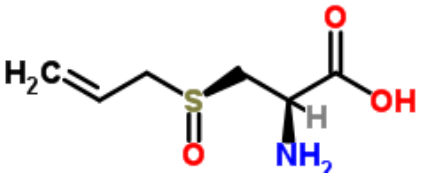
Structures: Chemspider

SO_2

Artefact SO_2 generated

There are ways of blocking the interferences

***S*-allyl-cysteine sulphoxid**



Alliin
cytoplasm

2

1

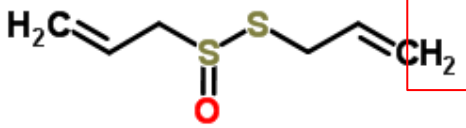
Alliinase
vacuole

When dried garlic wetted

Thermal degradation in acidic conditions Monier-Williams

1. Block enzyme action by ensuring initial pH < 1

2. Block Δ degrad^{n} if 2.4 < pH < 3.3 during heating phase



Allicin

Allyl 2-propene thiosulphinate

3 **Other S containing cpds**

e.g. Allyl mercaptan

Block by condenser at -5°C and trap in toluene

SO_3^{2-}

Spontaneous degradation

***S*-allyl thiosulphate [??]**

Volatile S cpds, *e.g. diallyl disulphide*

Added SO_2 destroyed

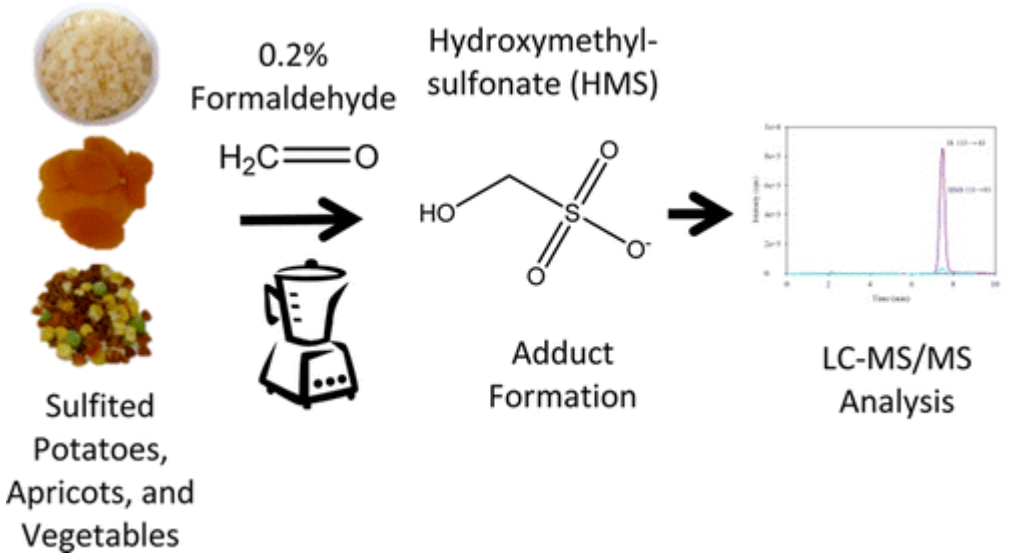
SO_2

Artefact SO_2 generated

Lafeuille, *et al*. "Determination of added sulfites in dried garlic with a modified version of the optimized Monier-Williams method." *JAOAC Int* 90.4 (2007): 1090-1097

Structures: Chemspider

LC-MS/MS



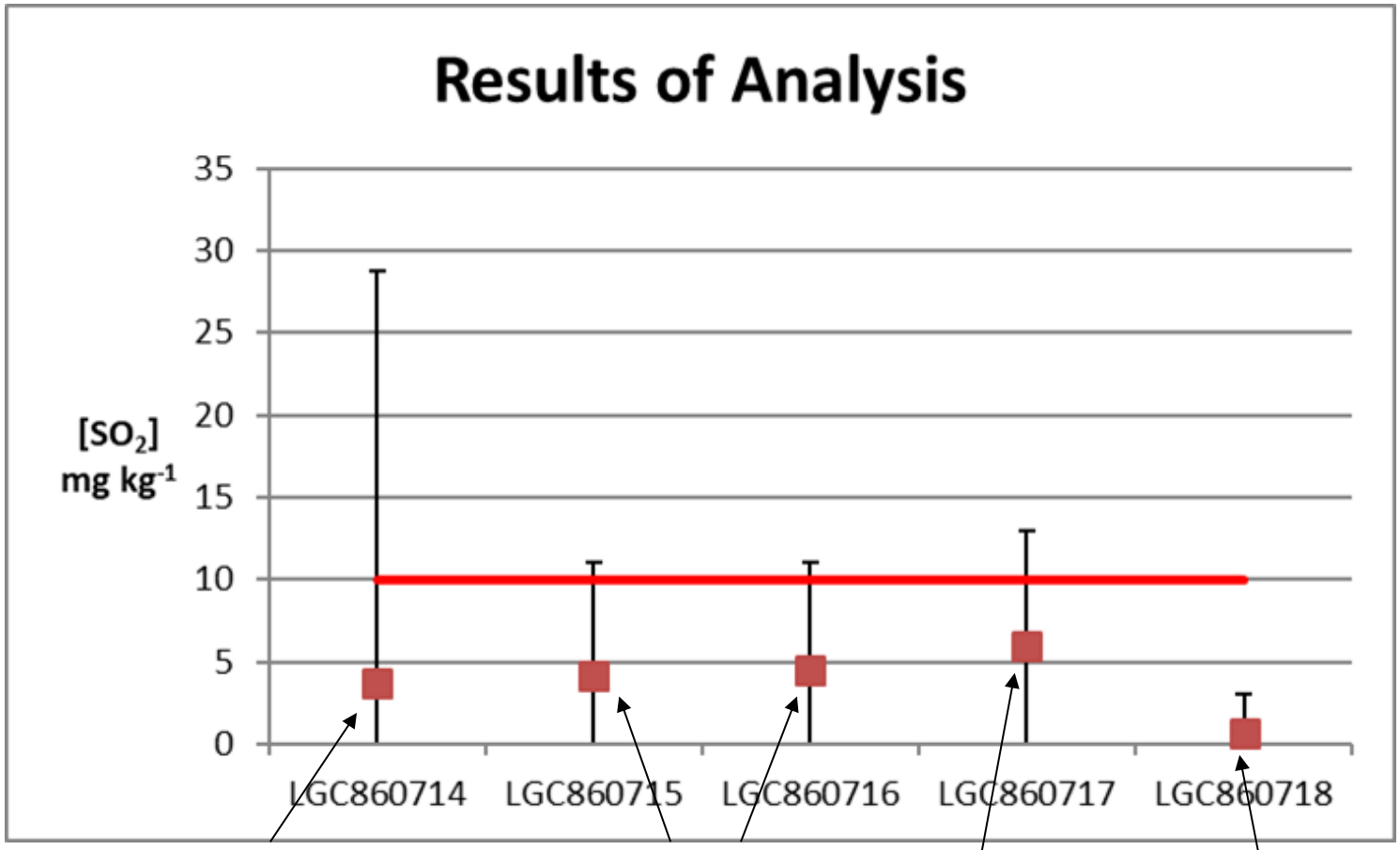
- Extract with 0.01 M HCl / 0.01 M mannitol (Perfetti & Diachenko)
- pH 4.5 buffered HCHO (Robbins *et al*.) SO_2→HMS
- C_{18} SPE, heat and add IS ($Na_2{}^{34}S_3$)
- Hydrophilic interaction chromatography (HILIC)
- Multiple reaction monitoring (MRM) in tandem MS

Perfetti, & Diachenko, 2003. Determination of sulfite in dried garlic by reversed-phase ion-pairing liquid chromatography with post-column detection. *Journal of AOAC International*, *86*(3), pp.544-550

Robbins, K.S., Shah, R., MacMahon, S. and de Jager, L.S., 2015. Development of a liquid chromatography–tandem mass spectrometry method for the determination of sulfite in food. *Journal of agricultural and food chemistry*, 63(21), pp.5126-5132.

Robbins Carlos, K.S. and de Jager, L.S., 2016. Comparison of multiple methods for the determination of sulphite in Allium and Brassica vegetables. *Food Additives & Contaminants: Part A*, *33*(10), pp.1509-1517.

Reported


Results of Analysis
35
30
25
20
15
10
5
0
[SO2]
mg kg-1
LGC860714
LGC860715
LGC860716
LGC860717
LGC860718
Retail Pks x3
Retail Pks x15
Roasted Sesame
Sesame

Case examples

Honey

Codex Alimentarius 1981
Council Directive 2001/110/EC

"the natural sweet substance produced by *Apis mellifera* bees from the nectar of plants or from secretions of living parts of plants or excretions of plant-sucking insects on the living parts of plants, which the bees collect, transform by combining with specific substances of their own, deposit, dehydrate, store and leave in honeycombs to ripen and mature"

Bee enzymes - diastase (amylases) and invertase (α-glucosidase), dehydrate and deposit it in honeycombs to ripen and mature.

Thus honey is a concentrated aqueous solution of 'invert' sugar (the monosaccharides glucose and fructose)
And …

https://fineartamerica.com/featured/honey-bees-fanning-after-storm-shawn-jeffries.html

Honey also contains …

… a wide range of saccharides, amino acids, proteins, organic acids, vitamins, minerals, enzymes, polyphenols and pollen.

That originate from:

- maturation of the honey,
- the addition of components from the bees
- botanical source & geographical area were the bees foraged

And depend on

… the species of the bee,

… season in which the honey is produced and

… honey storage

Directive & Codex Criteria

Composition

… Maxima for moisture, sucrose and water insoluble solids, free acidity, conductivity & hydroxymethlyfurfural

… Minima for the sum of fructose and glucose, diastase activity and conductivity (honeydew honey)

Labelling

Name of country of origin or

“Blend of EU honeys / Blend of non-EU honeys /

Blend of EU and non-EU honeys”

Honey under threat

Bees

Climate change

Varroa mite

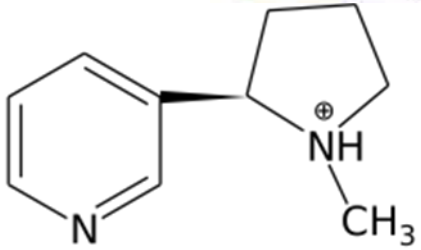
Pesticides

Colony collapse disorder

Stress

Less honey,

demand remains high
=> FRAUD



European Commission 2015 coordinated control plan (JRC report April 2017)

- 28 MS, Switzerland and Norway collected > 2000 samples of honey, 45 % from retailers …
- Tiered analysis …
- JRC were sent samples that had been found compliant by the tests carried out in the MS (893 samples) for analysis by EA/LC-IRMS.
- JRC found 14 % (127/893) of the submitted honey samples did not conform to published benchmark purity criteria
- δ13C ratios of individual sugars, protein and the % peak areas of oligosaccharides indicating that foreign sugars may have been added (Elflein and Raezke 2008).
- Total of approx 20 % of the honey samples examined in the EU were non-compliant with authenticity criteria
- Perhaps inflated by the targeted nature of the surveillance

Photosynthesis metabolic pathways IRMS

- ~ 90 % of plants are C_3 plants – beet, wheat, rice
- C_4 plants – maize and sugar cane
  - $\partial^{13}C$ ‰ = $[R_{sa}/R_{std} - 1]*1000$
  - Where R = $\partial^{13}C/\partial^{12}C$ in CO_2
- C_3 plants exhibit $\partial^{13}C$ of -23 to -28 ‰
- C_4 plants exhibit $\partial^{13}C$ of -9 to -15 ‰
- AOAC method EA-IRMS detects C_4 sugars over 7 % but not C_3 sugars
- But - (Elfein & Raezke) $\partial^{13}C$ of the individual sugars and their ratios by EA-LC-IRMS can do so

Elflein, L. and K.-P. Raezke, Apidologie, 2008. **39**(5): p. 574-587.

JRC meeting
5 types of adulteration

1. **Addition of sugar**
2. **Mislabelling**
3. **Resin treatment / ultrafiltration (blending)**
4. **Bee feeding**
5. **Immature honey**

   Not properly defined in legislation, guidance needed, discrimination between industrially dried immature honey and mature honey is an analytical challenge.

https://ec.europa.eu/jrc/sites/jrcsh/files/ares181569074-1_technical_round_table_on_honey_adulteration_report.pdf

Recommendations

- Critical review of the current definition of identity and purity criteria of honey
- Analysis of the vulnerability of the honey supply chain & an improved traceability system implemented
- Screening methods
- Analytical methods to detect emerging fraud should be developed and existing methods should be validated
- A mechanism for providing quality assurance tools should be established
- Databases

Next steps (JRC)

- A concerted action and effective coordination by independent body
  - Participants suggested JRC at the technical level and political decisions existing expert groups already coordinated by DG AGRI to take the lead.
- Collaboration among European stakeholders and international players
  - DG SANTE and DG AGRI, MS competent authorities & their national apiculture programmes, industry, beekeeper associations and consumer associations, ISO and IHC
- Appropriate resources and a wider network to avoid non-harmonised standard setting that could create barriers to trade.

Mānuka Honey

Sweet sensation: New Zealand beehives *(Alamy)*

Manuka honey is ever more prized for its health benefits. But with more being sold than is actually produced, is there some dodgy dealing going on?

SIMON USBORNE
@susborne
Tuesday 1 July 2014 19:36

Like CLICK TO FOLLOW INDY/LIFE

https://www.independent.co.uk/life-style/food-and-drink/features/the-manuka-honey-scandal-9577344.html

New Zealand
Ministry for Primary Industries

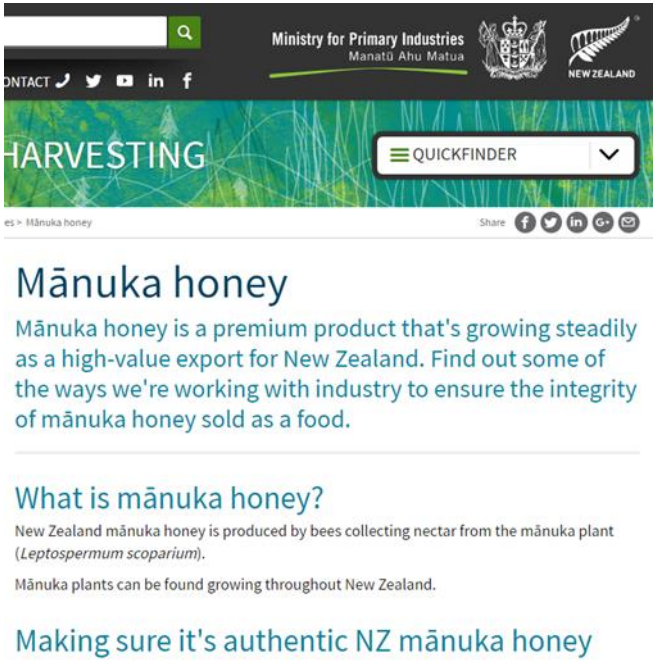
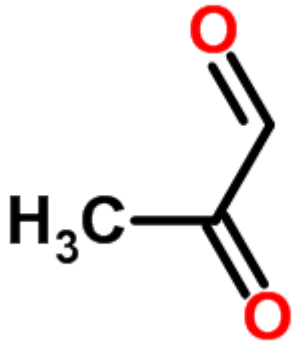


Table 1 The five compounds and specified limits to characterise mono- and multifloral mānuka honey by MPI

Compounds	Monofloral	Multifloral
3-Phenyllactic acid	≥ 400 mg kg^{-1}	$\geq 20, < 400$ mg kg^{-1}
2′-Methoxyacetophenone	≥ 5 mg kg^{-1}	≥ 5 mg kg^{-1}
2-Methoxybenzoic acid	≥ 1 mg kg^{-1}	≥ 1 mg kg^{-1}
4-Hydroxyphenyllactic acid	≥ 1 mg kg^{-1}	≥ 1 mg kg^{-1}
DNA	< Cq 36 3 fg µL^{-1}	< Cq 36 3 fg µL^{-1}

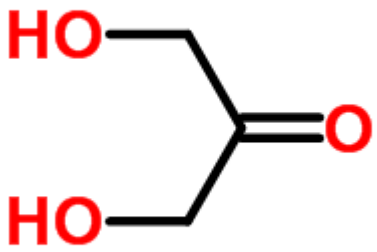
Mānuka honey authenticity

1,2-dicarbonyl compounds



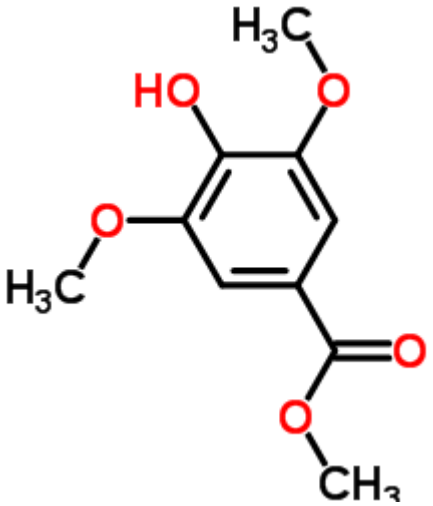
Methylglyoxal (MGO) low in honey apart from mānuka honey where it can be up to 760 mg kg^{-1}

Not due to sugar degradation but from dihydroxyacetone (DHA) in mānuka flower nectar and converts to MGO during honey maturation



DHA is commercially available a food additive & in cosmetic self-tanning creams which weakens the case for both it and MGO as reliable chemical markers for mānuka honey.

Mānuka honey authenticity



Manuka honey contains a unique phenolic compound, methyl syringate - also found in some honeys from Sardinia and is widely distributed in plants it is not suitable for use as a sole marker for mānuka honey

Food Analytical Methods
https://doi.org/10.1007/s12161-018-1154-9

A Critical Review of the Factors Available for the Identification and Determination of Mānuka Honey

D. Thorburn Burns[1] · Anne Dillon[1] · John Warren[2] · Michael J. Walker[2]

Received: 27 September 2017 / Accepted: 8 January 2018

Abstract
Methods for the determination of the authenticity of samples of mānuka honey are reviewed. Suggestions are made as to how to authenticate, or otherwise, the label claims for a given sample of mānuka honey.

Keywords Mānuka honey · Authenticity · Chemical markers · Analytical methods

[1] The Institute for Global Food Security, The Queen's University of Belfast, Belfast BT9 5HN, UK

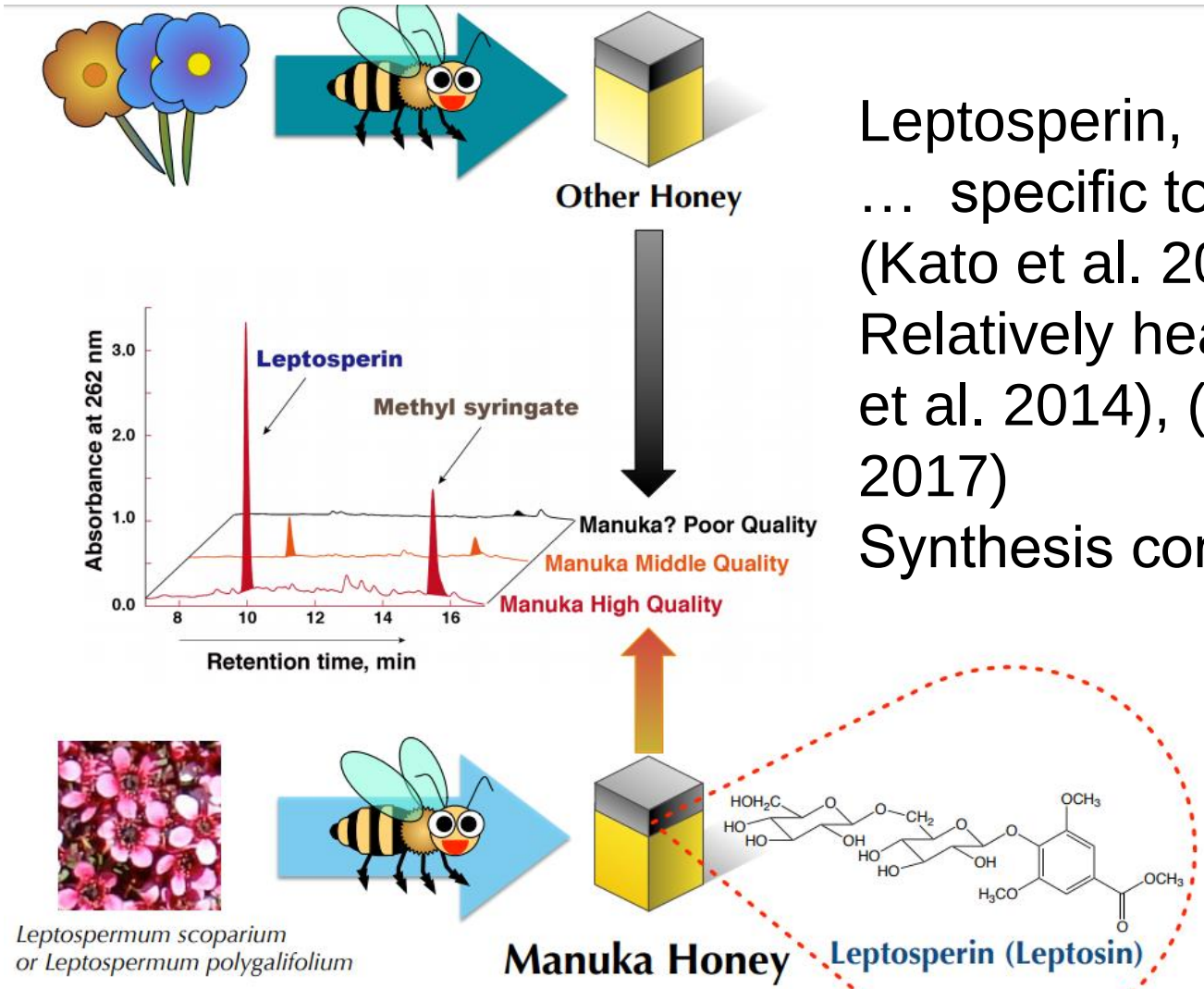
[2] Laboratory of the Government Chemist, LGC, Queen's Road, Teddington, Middlesex TW11 0LY, UK

Published online: 20 January 2018

Recommendations

1. International validation of an NMR method for leptosperin and total MGO & if possible lepteridine
2. Establish the range of expected values for the markers bearing in mind the distribution of the various varieties of *L. scoparium* in the various honey-producing areas in NZ
3. Encourage the development of a validated point of use immuno-chemical test kit for leptosperin.
4. Further studies in the application of front-surface fluorescence are indication as this method allows the simultaneous measurement of chemical makers for kānuka honey in addition to those for mānuka honey.

Mānuka honey authenticity



Leptosperin, novel glycoside … specific to mānuka honey (Kato et al. 2012).
Relatively heat stable (Kato et al. 2014), (Bong et al. 2017)
Synthesis complex …..

LC-UV-DAD
LC-MS/MS

Kato, *et al*.,2014. Plausible authentication of manuka honey and related products by measuring leptosperin with methyl syringate. *Journal of agricultural and food chemistry*, 62, 6400-6407.

Nuclear Magnetic Resonance, NMR

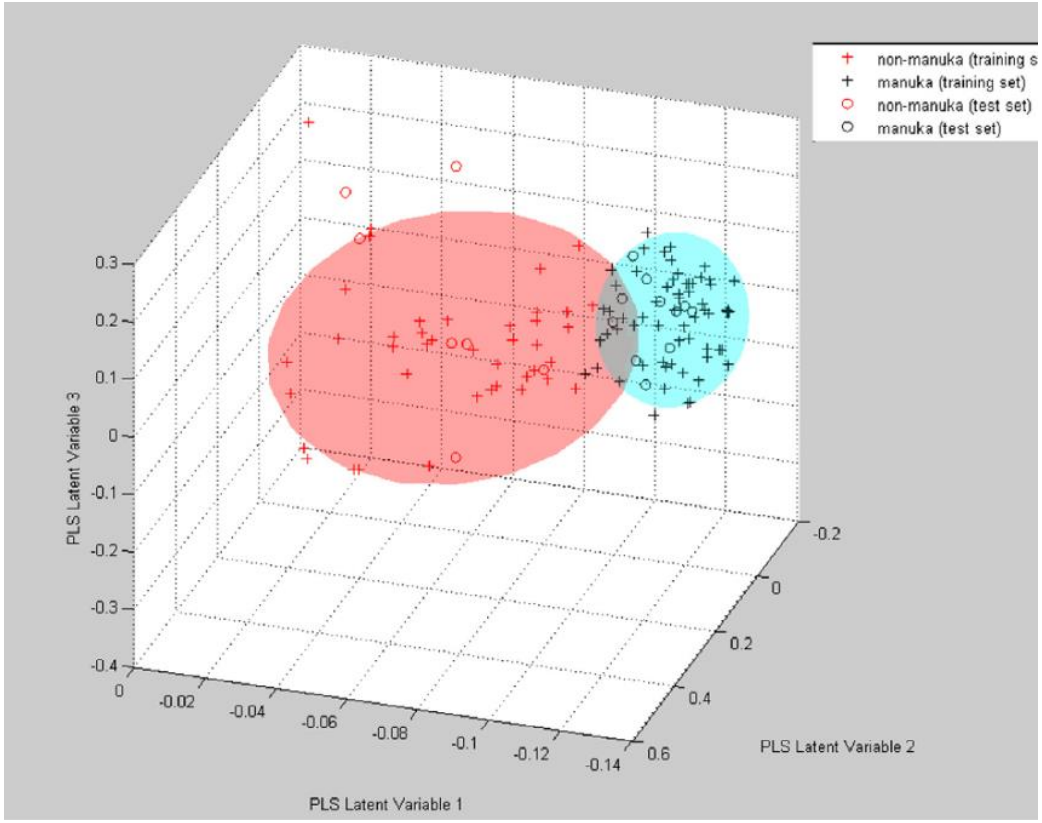
- NMR - quantitative data and molecular structural information with little sample prep for honey samples
- Over last 5 years ~20 papers
- Donarski *et al* 2010 total MGO - does not uniquely designate a sample as mānuka, but correlates with a honey's antimicrobial strength measured by the "Unique Mānuka Factor" (UMF)
- Diffusion Ordered Spectroscopy (DOSY) NMR has potential although most of the compounds giving marker signals were not identified (Le Gresley *et al*. 2012).

Donarski J A, Roberts D P T, Charlton A J (2010) Quantitative NMR spectroscopy for the rapid measurement of methylglyoxal in manuka honey. Anal Methods 2:1479-1483

Le Gresley A, Kenny J, Cassar C, Kelly A, Sinclair A, Fielder M D (2012) The application of high resolution diffusion NMR to the analysis of manuka honey. Food Chem 135: 2879-2886

NMR

- ^{1}H NMR & chemometrics (Spiteri *et al*. 2017).
- MGO DHA and leptosperin determined simultaneously.



Spiteri M, Rogers K M, Jamin E, Thomas F, Guyader S, Lees M, Rutledge D N (2017) Combination of 1H NMR and chemometrics to discriminate manuka honey from other floral honey types from Oceania. Food Chem 217: 766-77

NMR under scrutiny

Food Chemistry

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

Fast and global authenticity screening of honey using ^{1}H-NMR profiling

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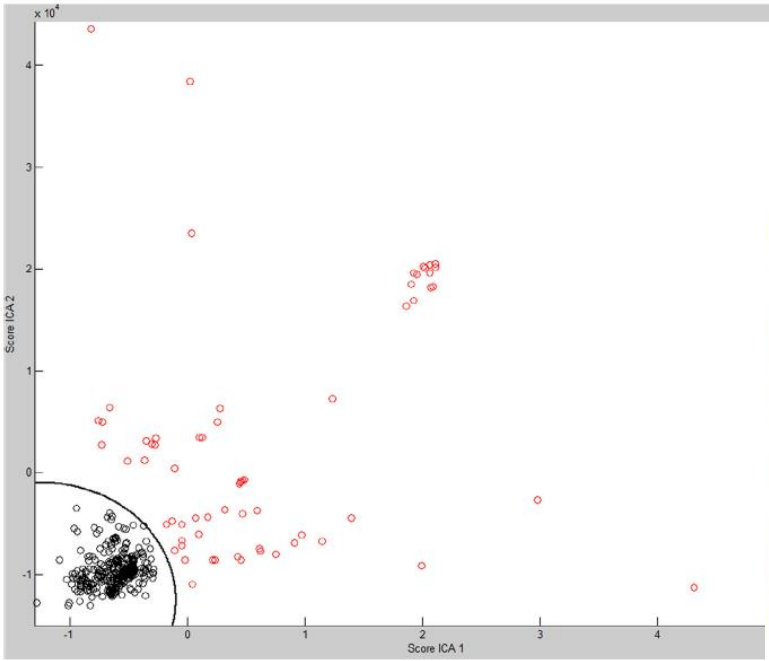

Food Standards Agency
food.gov.uk

To: Heads of Environmental Health Services (England)

Directors of Trading Standards Services (England)

Cc: CIEH, CTSI, APA

22nd December 2015 ENF Ref: ENF/E/15/041

Issue

In some instances a 1H or proton nuclear magnetic resonance (NMR) method is being used to screen honey for added (or exogenous) sugars, including from C3 plants such as beet sugar or sugar syrups. This screening method gives indicative results and does not definitively prove that added sugar is present. FSA's advice is that no enforcement action should be taken in relation to the NMR results alone with regards to added sugar at the present time, while we await the results of work to be undertaken by the European Commission's Joint Research Centre – Institute for Reference Materials and Measurements (JRC-IRMM).

Afgørelse om hjemvisning i sag om påbud om underretning af aftagere af et produkt med varebetegnelsen honning i Vejle Kommune.

2016, Danish Veterinary and Food Administration

- Samples taken during inspection visits examined by an NMR profiling test “demonstrated an atypical spectrum”, that is, were not real honey
- DVFA prohibited sales of specific ‘honeys’ by 2 companies
- Decisions appealed to Environment and Food Appeals Board

Acknowledgement: Pernille Lundquist Madsen, Ministry of Environment and Food, The Danish Veterinary and Food Administration

http://www.mfknafgoerelser.dk/afgoerelse/nmk20171214-000j

Basis of appeal:
(As I understand it!)

Administrative reasons and

- The honey has been accepted for years
- The company's own analytical results do not show any added sugar
- Adequacy of NMR method and its reference database challenged
- Almost all Chinese honey harvested early, (moisture high) and as a consequence fails NMR test
- If left in hive to ripen bees would stop producing but by taking it bees continue to produce honey, beekeeper can harvest many more kilos
- Immature honey is still true honey
- Matured honey (“Chinese honey passing an NMR test”) is more expensive than immature honey, but there is nothing wrong with the immature Chinese honey. It is also real honey.

Danish appeal decision

The Environment and Food Appeals Board confirmed DVFA decisions of injunctions against the marketing of honey

The decision is final and can not be brought to another administrative authority…

- The Appeals Board found the analysis results were complex and neither simple or straightforward. The company should therefore have had a deadline to deliver a party hearing response.
- The inspection visit on 18 January 2016 was inadequate given the complexity of the case.
- The product in this case is harvested before it is mature, … therefore the product can not be marketed as honey, cf. Section 6 (1) of the Honey Decree. 1, as it does not comply with the definition in Section 2 of the Honey Decree

Case examples

Home > News

10 tonnes of psychoactive substance seized at Southampton docks

Within this section

News Archive

o2 Guildhall Southampton

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FEEDBACK

Illegal high shipment to be destroyed

20/01/2017

https://www.southampton.gov.uk/news/article.aspx?id=tcm:63-390586

Kratom, *Mitragyna speciosa*

GC

10 tonnes arrived 4th April 2016

NCA National Crime Agency → **PHA** → **Contacted 26th April 2016**

Psychoactive Substances Act 2016

PA | PHE

Came into force on 26 May 2016

The Psychoactive Substances Act 2016 (Commencement) Regulations 2016

Kratom, *Mitragyna speciosa*
PHA seizure challenged

Civil complaint under the Official Feed and Food Controls (England) Regulations 2009 & Food Safety Act 1990

S. 9 of the 1990 Act & Regulation 33 of the 2009 Regulations allow for an appeal to Magistrates' court against the PHA decision

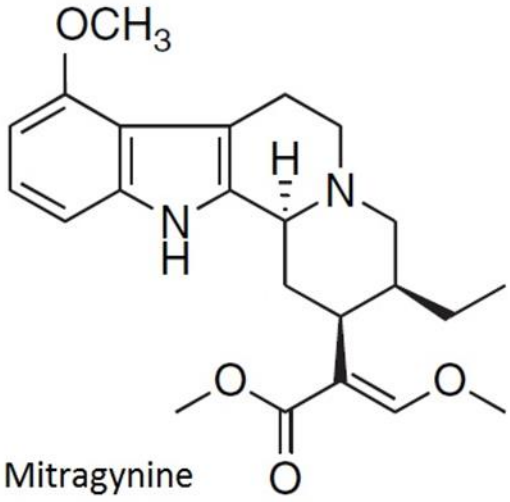
The question for the court was whether the cargo is actually 'food' at all

The Respondent submitted that it is

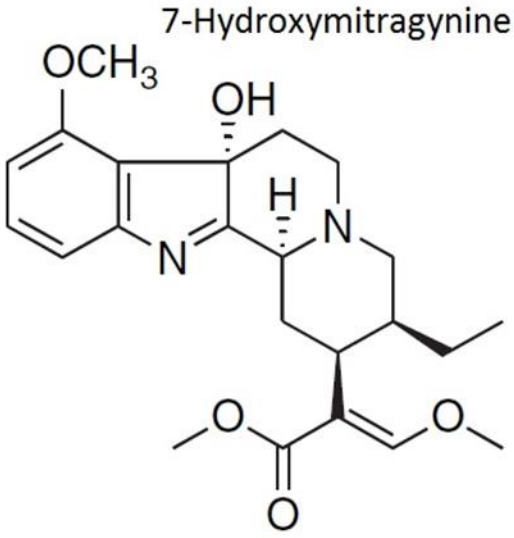
The Complainant submitted that it is not

Statement and trial

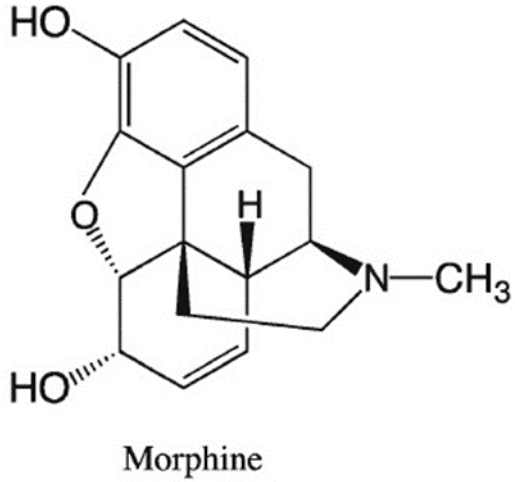
- Desktop review of the scientific literature on kratom
- Cosmetic products
- Novel Food
- Oral testimony Magistrates' Court



Mitragynine



7-Hydroxymitragynine



Morphine

Shellard, E.J., 1974.. Bulletin on Narcotics, 26(2), p.41 / Cinosi, et al., 2015. BioMed research international

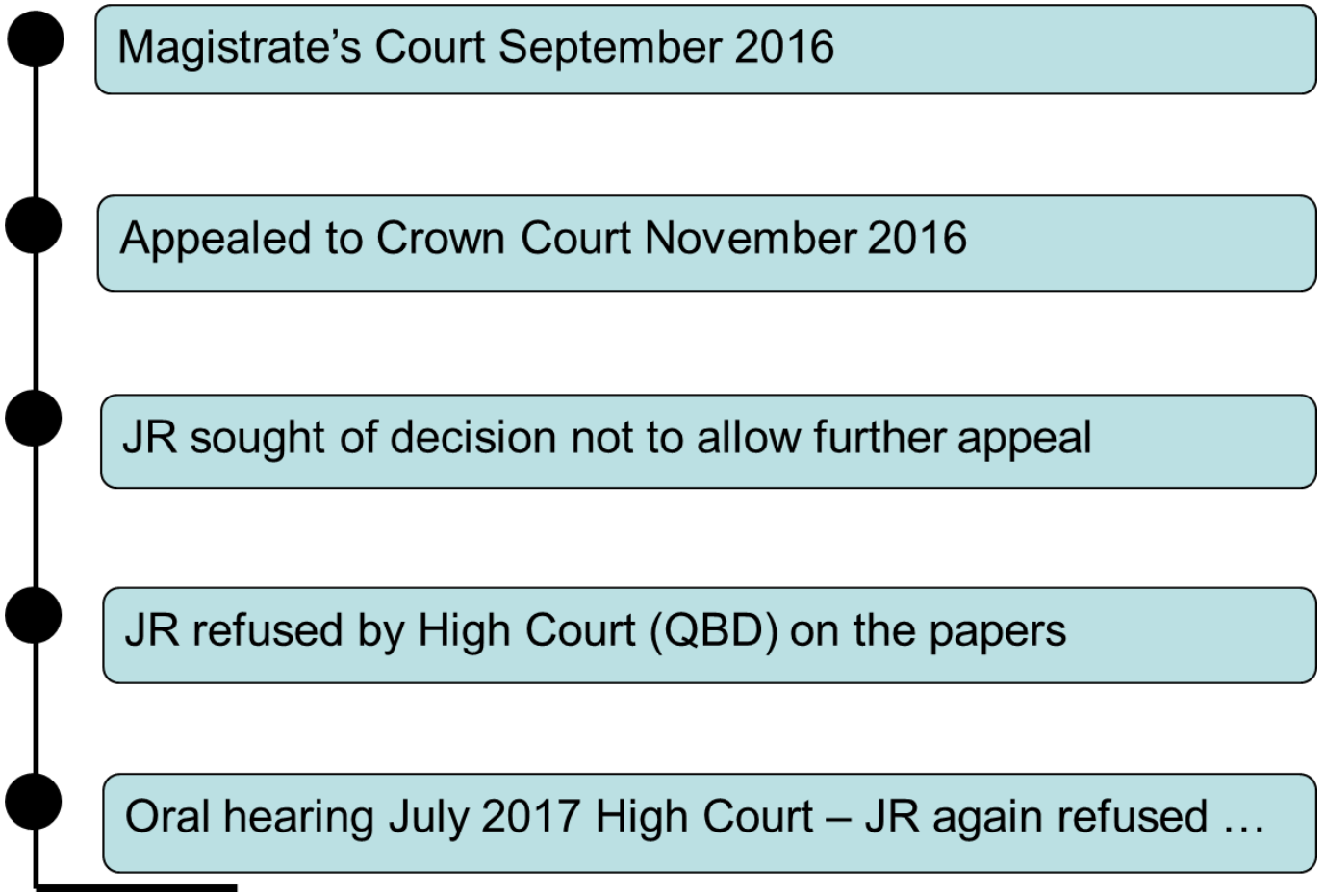
Further appeal

- Reg. 34 of the 2009 Regulations allows an appeal to the Crown Court against the decision of Magistrates' Court
- Crown Court before the Recorder with two lay justices
- + NCA drug trafficking intelligence officer - market for Kratom and the street value of the consignment.
- + statements from a European University on compliance of the cosmetics
- Advised the court on the prior approval system for cosmetics
- Toxicological profile of the constituents of Kratom.

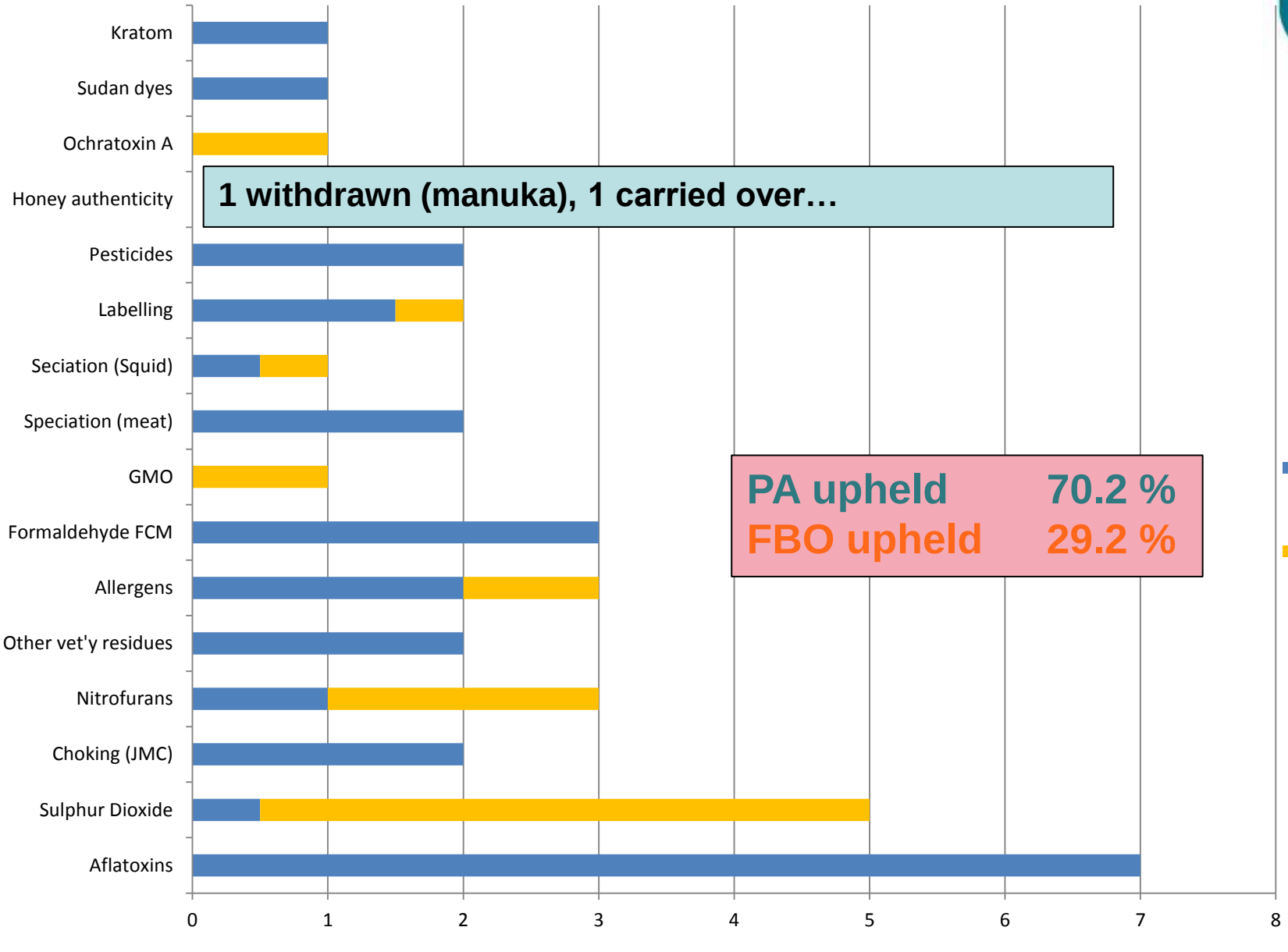
Appeal dismissed

- … burden is on Respondents (“the PHA”) to satisfy the court … that the cargo was “food”, defined as “*a substance or product …. intended to be, or reasonably expected to be ingested by humans*”.
- ... [importer’s] stated intention … the cargo was destined for cosmetic production rather than ingestion
- … and the PHA’s challenge to the genuineness of that stated intention. …
- **Courts conclusions**
- …. we are satisfied on a balance of probabilities that the cargo detained by the PHA was *food* within the meaning of the Regulations because it was *intended to be, or reasonably expected to be ingested by humans*.

Hearings


Magistrate's Court September 2016
Appealed to Crown Court November 2016
JR sought of decision not to allow further appeal
JR refused by High Court (QBD) on the papers
Oral hearing July 2017 High Court – JR again refused …

Cases in the 14/17 Programme



Conclusions

- On a small dataset our findings uphold OCLs on at least 70 % of occasions, what went wrong with the opposing results?

- Are the FBO CoAs genuine?
- Was there sufficient awareness of context?
- Was an appropriate validated method applied?
- Were the results correctly interpreted?
- Is one method sufficient?

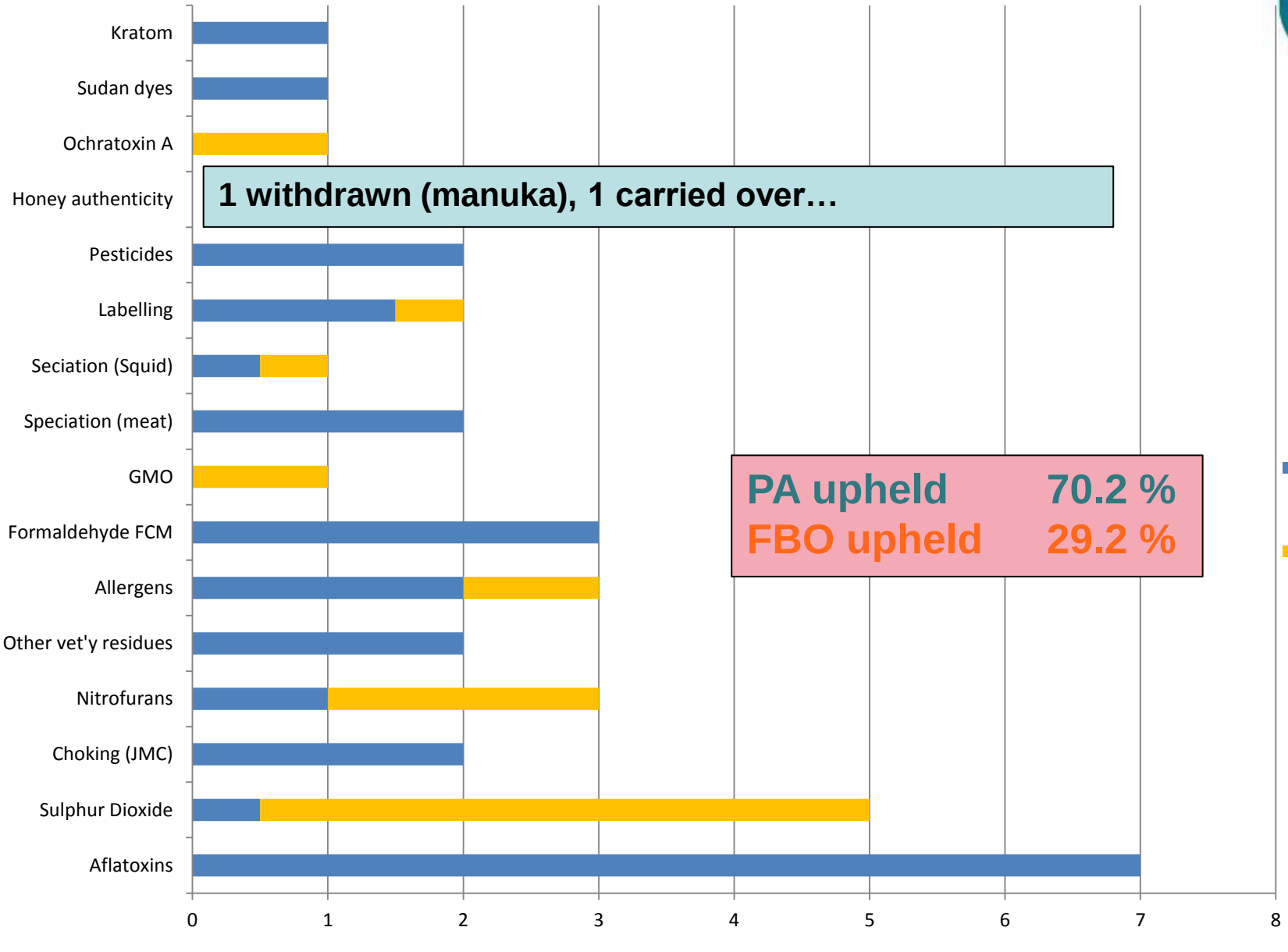
Conclusions – honey:

- Honey fraud does exist & can be on a massive scale
  - Beekeeper, packer, broker …
- Resilience in the supply chain depends on documentary checks and traceability essential but
- A combination of laboratory methods may be required:
  - Classical analysis
  - Pollen analysis by microscopy
  - δ13C EA-IRMS) and $\delta^{13}C$ EA/LC-IRMS (Elfein & Raezke)
  - NMR
  - Markers should preferably be known, stable, chemically and topographically characterised and traceable to recognised bee keeping practices, not readily available in bulk or readily synthesised

Resilience in the supply chain

- Distributed ledger systems can guarantee authenticity and safety
- But – if the appropriate sample isn't tested by
  - Fit for purpose methods
  - Results interpreted correctly in a forensic context
  - We have found complementary methods and a weight of evidence approach
- The blockchain entry may be wrong
- Resilience requires good laboratories and informed interpretation

Cases in the 14/17 Programme



Conclusions

Technical appeal is the final *analytical* step in the food control process

Brown v. Allen (1953) " … *we are not final because we are infallible, but we are infallible only because we are final*…"

"… *analytically* final because we are right…?

Rigorous sampling, sample homogeneity, well characterised methods, extent of replication, informed interpretation …

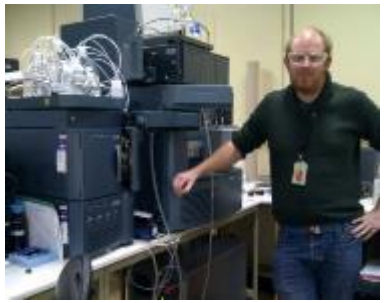
"… *analytically* right because we are final…?

Sample homogeneity difficult or impossible, methods require investigation, boundaries of current science …

Our aim: to safeguard regulators, businesses & courts from unwitting errors in measurement science … that is a shared responsibility with OGDs, OCLs and industry



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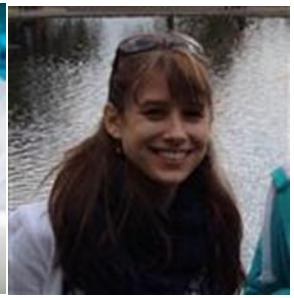



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In particular, any view, information or advice given should not be taken as an authoritative statement or interpretation of the law, as this is a matter for the courts.

Thank You for listening

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