ADVISORY COMMITTEE ON ANIMAL FEEDINGSTUFFS

68th Meeting of ACAF on 28 October 2015

Presentation and discussion: Maximum Permitted Levels of Nutritional Feed Additives – relationship to human dietary intake

Geoff Brown and Ian Givens
October 2015

Maximum Permitted Levels of Nutritional Feed Additives – relationship to human dietary intake

Presentation to ACAF, October 2015

Geoff Brown and Ian Givens

Two topics in ACAF Forward Work Programme

5. Trace element status of feeds.

- Pressure from EFSA to reduce maximum permitted levels of trace elements.
- Different reasons.
- Concern that in some cases this could compromise human dietary intake.

12. Manipulation of animal diets to enhance the nutritional value of food.

- Potential to improve intake of essential nutrients by increasing their levels in animal derived foods (meat, milk, eggs).
- Topic adopted by ACAF in 2009 after discussion by GACS.

Legislative background

- All trace elements are feed additives and subject to EU authorsation.
- All additives are undergoing re-authorisation according to Regulation (EC) No 1831/2003.
- Involves assessment by EFSA.
- Safety assessment includes consideration of:
  - target animals
  - non-target animals
  - consumers of animal derived foods
  - users
  - environment

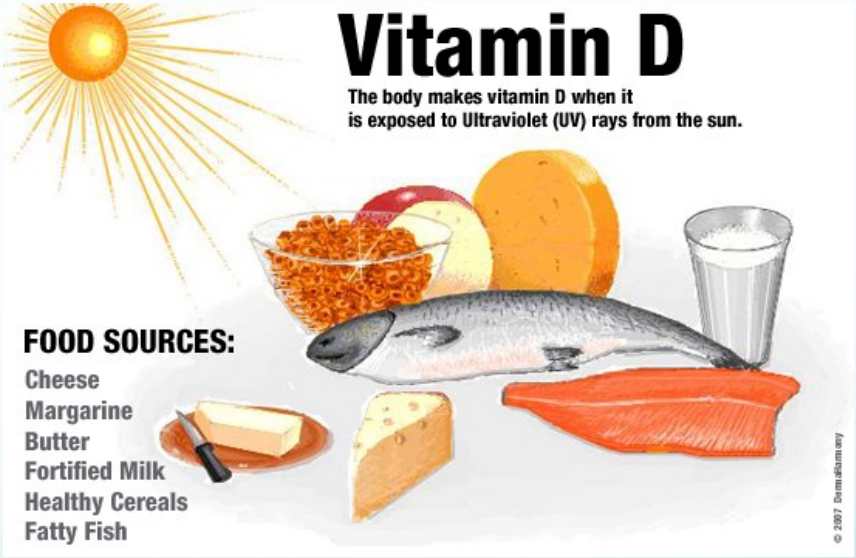
Legislative background

Recent EFSA opinions have recommended reduced maximum levels for:

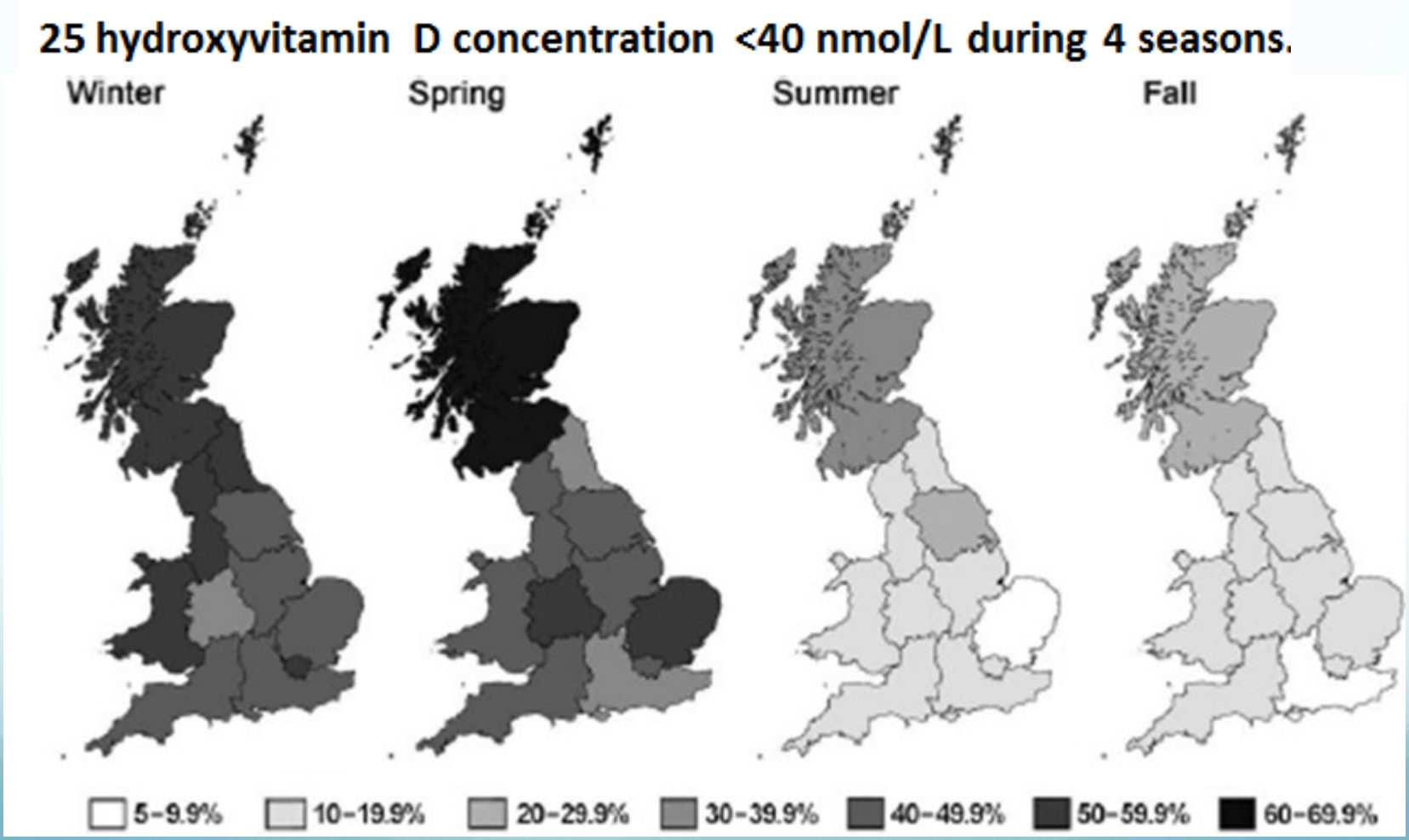
Element	Primary concern
Iron	Animal requirement
Zinc	Environment
Cobalt	User safety / animal requirement
Selenium	Consumer exposure – risk to high consumers
Iodine	Consumer exposure – risk to high consumers
Vitamin A	Consumer exposure – risk to high consumers

Vitamin D

- Maximum Permitted Levels for Vitamin D are already widely considered to be too low.
- Many vitamin D responsive conditions recorded in the population.
- Should animals be a vector for reliable dietary supply?



Vitamin D


25 hydroxyvitamin D concentration <40 nmol/L during 4 seasons.
Winter
Spring
Summer
Fall
5-9.9%
10-19.9%
20-29.9%
30-39.9%
40-49.9%
50-59.9%
60-69.9%

Iodine

British Journal of Nutrition, page 1 of 10

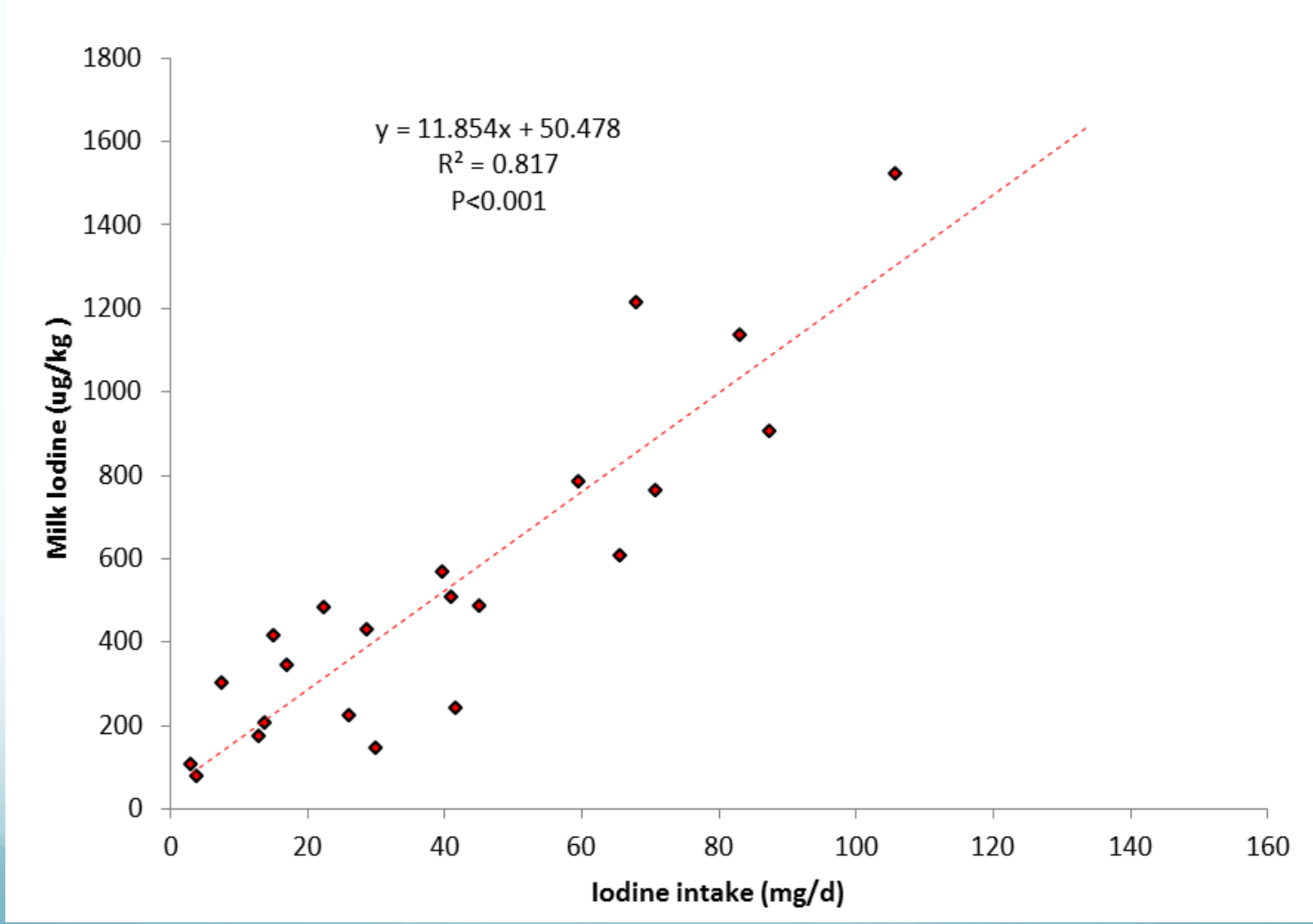
Iodine deficiency in pregnant women living in the South East of the UK: the influence of diet and nutritional supplements on iodine status

Sarah C. Bath[1], Alan Walter[1], Andrew Taylor[1], John Wright[1,2] and Margaret P. Rayman[1]*

[1]*Department of Nutritional Sciences, Faculty of Health and Medical Sciences, University of Surrey, Guildford GU2 7XH, UK*
[2]*Royal Surrey County Hospital, Egerton Road, Guildford, Surrey GU2 7XX, UK*

(Submitted 23 September 2013 – Final revision received 7 November 2013 – Accepted 15 November 2013)

Iodine


y = 11.854x + 50.478
R² = 0.817
P<0.001
Milk Iodine (ug/kg)
Iodine intake (mg/d)
0
200
400
600
800
1000
1200
1400
1600
1800
0
20
40
60
80
100
120
140
160

Vitamin A

EFSA recommended reductions in feed based on the risk of bone fracture in elderly high consumers.

"A majority of the UK population's vitamin A requirements are not met by dietary intake of pre-formed retinol."

"15% of young individuals aged 19-24 years have total vitamin A intake below the lower recommended intake level."

"In order to estimate long term intake of Vitamin A with any extent of accuracy, dietary records would have to be kept for a minimum of 15 weeks"

Leitz & Hill, Newcastle University. Report for FEFANA, 2012

Human population nutritional status -1

Nutrient	Population Group	% below LRNI	Main Dietary source	Authorised NHC
Vitamin A	Children 1.5 - 3 years		Milk & milk products - 33%	6
	Children 4 - 10 years		Milk & milk products - 56%	
	Children 11 - 18 years	14(♀) 11(♂)	Milk & milk products	
	Adults 19-64	11%(♂)	Milk & milk products - 30%	
	Adults 65+			
Vitamin D	Children 1.5 - 3 years	27	Milk & milk products - 24%	11
	Children 4 - 10 years		Meat & meat products 23-35%	
	Children 11-18 years		Meat & meat products 23-35%	
	Adults 19-64		Meat & meat products 23-35%	
	Adults 65+	33	Meat & meat products 23-35%	

National Diet & Nutrition Survey, Years 1-4 combined, 2008/9 -2011/12
EU Register on nutrition & health claims

Human population nutritional status -2

Nutrient	Population Group	% below LRNI	Main Dietary source	Authorised NHC
Zinc	Children 1.5 - 3 years		Milk & milk products (36%)	18
	Children 4 - 10 years	7(♂) 11(♀)		
	Children 11-18 years	17(♂) 22(♀)	Meat & meat products 32-35%	
	Adults 19-64		Meat & meat products (32-35%)	
	Adults 65+	10 (♂)		
Selenium	Children 1.5 - 3 years		Milk & Meat products 40%	6
	Children 4 - 10 years		Milk & Meat products 37%	
	Children 11-18 years	22(♂) 46(♀)	Meat & meat products 28-32%	
	Adults 19-64	26(♂) 51(♀)	Meat & meat products 28-32%	
	Adults 65+	30(♂) 52♀)	Meat & meat products 28-32%	
Iodine	Children 1.5 - 3 years		Milk & milk products (64%)	6
	Children 4 - 10 years		Milk & milk products	
	Children 11-18 years	9(♂) 22(♀)	Milk & milk products	
	Adults 19-64	6(♂) 10(♀)	Milk & milk products (33%)	
	Adults 65+		Milk & milk products	

National Diet & Nutrition Survey, Years 1-4 combined, 2008/9 -2011/12
EU Register on nutrition & health claims

Concerns - feed

- Lower levels may not always be achievable due to high / variable background levels.
- Big geographical / geological variation in micronutrient levels in feed materials in EU.
- Reduces flexibility to increase feed levels when feed intake compromised (e.g. health, heat) or antagonists present.
- Reduces flexibility for complementary feeds fed at different rates.
- Health & welfare concerns in some species groups.
- Perceived poor control on farm needs to be managed.

Concerns - food

- Foods of animal origin are often key dietary sources of essential nutrients.
- Big differences in consumption between member states.
- In focusing on protecting high-level consumers, could larger population groups with sub-optimal intakes be compromised?
- Would targeted consumer advice be a better approach?

Concerns - food

- High intake consumers may be ‘atypical’
- Dietary intake assessments may be unreliable, especially for foods consumed infrequently.
- Actual RDAs may be considered too low (e.g. Vit D)
- Questions re:
  - Selenium (lower levels implemented for organic forms)
  - Iodine (lower recommended levels implemented)
  - Vitamin A (lower levels implemented)

Claims

- To be a ‘source’ of a nutrient, foods must supply at least 15% of the RDA per portion.
- To be ‘rich’ in a nutrient, foods must supply at least 30% of the RDA per portion.
- If animal-derived foods are enhanced by the use of micronutrients authorised for use in feed but not food, is this legal?

Question

Assuming no risk to animal health or the environment, should maximum permitted nutrient levels for animals be established to:

- optimise the nutritional need of the animals?

or

- optimise the nutritional need of consumers?

Is there scope to positively influence the human diet through animal feeding?

Concluding questions

- Can the imposition of Maximum Permitted Levels of feed additives impact on human consumption of key nutrients?
- Can the levels of nutrients in animal feed positively influence dietary consumption?
- Should the two topics be linked?