COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD, 
CONSUMER PRODUCTS AND THE ENVIRONMENT 

SACN REVIEW OF VITAMIN D - INTRODUCTION

Introduction

1. As part of the horizon scanning process in February, 2011, Members were informed that the Scientific Advisory Committee on Nutrition (SACN) would be starting to review their recommendations on vitamin D. The COT has been asked to provide advice on high levels of vitamin D intake.

Background

2. Excess levels of vitamin D are associated with the occurrence of hypercalcaemia and hypercalciuria. Vitamin D promotes the absorption of calcium and resorption of bone resulting in calcium deposition in soft tissues, diffuse dimineralisation of bones and irreversible renal and cardiovascular toxicity (EVM, 2003). Hypercalcaemia has been reported in a few individuals taking part in supplementation study. Vitamin D was associated with an increased incidence of renal stones in human volunteers.

3. In the UK, the Reference Nutrient Intake for vitamin D was last reviewed in 1991 by the Committee on the Medical Aspects of Food Policy (COMA) (the predecessor of SACN) who stated that infants were most susceptible to hypervitaminosis D (COMA, 1991). They also noted that mild hypercalcaemia had been reported at intakes of 50 µg/day vitamin D per day or 15 mg every 3-5 months.

4. In 2003 the Expert Group on Vitamins and Minerals (EVM) reviewed vitamin D; they concluded that there was not enough information to establish a Safe Upper Level but that for guidance purposes, a supplementary intake of 25 µg/day was unlikely to result in adverse effects. This assessment was based on data from a number of human volunteer studies. The EVM also noted that it was difficult to assess the dose–response relationship for vitamin D toxicity due to the unknown contribution from sunlight. The EVM review and risk assessment of Vitamin D are attached at Annex A.

5. In 2002, the EU Scientific Committee on Food established a Tolerable Upper Level of 50 µg/day for adults (SCF, 2002). This was based on data on hypercalcaemia from a number of human volunteer studies.
6. The most recent review of vitamin D was undertaken in 2011 by the US Institute of Medicine (IOM) who established an Upper Level of 100 µg/day vitamin D for adults (IOM, 2011). This was also based on hypercalcaemia and considered 10,000 IU per day (250 µg) to be a NOAEL. The relevant extracts from the IOM report are attached at Annex B. Other adverse effects considered by IOM were mortality, chronic disease (cancer and CVD), falls and fractures.

SACN review

7. The draft terms of reference of the SACN review are:

To review the Dietary Reference Values for Vitamin D and make recommendations.

This will require risk assessment of the vitamin D status of the UK population and consideration of the:

- Biochemical indicators of vitamin D status and the validity of the values used to assess risk of deficiency and excess;
- Association between vitamin D status and health outcomes at all life stages and in population groups in the UK and the effects of biological modifiers;
- Potential adverse effects of high vitamin D intakes
- Contribution of cutaneous vitamin D synthesis to vitamin D status in the UK taking account of factors that modify skin exposure to sunlight; risks of skin damage and other adverse health outcomes associated with sunlight exposure.
- Relative contributions made by dietary vitamin D intake (from natural food sources, fortified foods and supplements) and cutaneous vitamin D synthesis to the vitamin D status of the UK population.

8. SACN use a detailed framework of evidence for their reviews and take a hierarchical approach to the available data with, in general, only placebo-controlled double-blind studies and prospective studies being considered. Data from retrospective human studies, animal or in vitro studies are essentially narrative. As noted above, the IOM has recently considered calcium and vitamin D. To ensure an efficient use of resources, SACN have agreed to use the IOM document as a bibliographic source, updating the search as required. The review, including a consultation period is scheduled to be completed in the summer of 2014.

9. As part of the SACN review, advice has been requested from the COT on upper levels of vitamin D intake. The draft work plan schedules this for May or June 2012 but it would need to be updated towards the end of the review process. To achieve this, the COT secretariat proposes that the COT considers vitamin D by February 2012 to allow a statement to be prepared and finalised.
Questions for the Committee

10. Members are asked whether:

a) they have any comments on the reports of the IOM, EVM and SCF?

b) Whether there are sufficient human data to make an assessment of vitamin D or whether animal and other data should be considered?

c) If animal and other data do need to be considered, do the committee consider that updating the 2003 EVM review would be sufficient or does the subject need to reviewed anew?

d) Is the IOM report a suitable bibliographic source for the review?

Secretariat
June 2011
REFERENCES


SCF (2002). Scientific Committee on Food. Opinion of the Scientific Committee on Food on the Tolerable Upper Intake Level of Vitamin D. SCF/CS/NUT/UPPLEV/38 Final
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EVM REVIEW AND RISK ASSESSMENT OF VITAMIN D

These documents can be found viewed at or downloaded from:

http://www.food.gov.uk/multimedia/pdfs/evm-00-11r.pdf


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EXTRACTS FROM IOM REPORT ON CALCIUM AND VITAMIN D:

Chapter 6 – Tolerable Upper Intake Levels: Calcium and Vitamin D

Appendix C – Methods and Results from the AHRQ-Ottawa Evidence-Based Report on Effectiveness and Safety of Vitamin D in Relation to Bone Health

Appendix D – Methods and Results from the AHRQ-Tufts Evidence-Based Report on Vitamin D and Calcium

Appendix G – Case studies of vitamin D Toxicity

These sections can be found viewed at or downloaded from:

http://www.nap.edu/catalog.php?record_id=13050

Note: for copyright reasons the papers in this annex will not be included in the published version on the COT website.

Secretariat
June 2011