Evaluation of Tolerable Upper Intake Levels for Vitamin D in Children and Adolescents

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Authors’ contributions

This work was carried out in collaboration between all authors. The opinion has been assessed and approved by the Panel on Nutrition, Dietetic Products, Novel Food and Allergy of VKM. All authors read and approved the final manuscript.

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ABSTRACT

In 2012, the European Food Safety Authority (EFSA) suggested a tolerable upper intake level (UL) for vitamin D at 100 µg/day for adults based on the risk of hypercalcaemia. EFSA concluded that consumption of up to 50 µg/day does not lead to hypercalcaemia in children and adolescents (10-17 years). Furthermore, EFSA stated that there is no reason to assume that children and adolescents in the phase of rapid bone formation and growth have a lower tolerance for vitamin D compared to adults, and a UL of 100 µg/day for adolescents aged 11-17 years and 50 µg/day in children 1-10 years, taking the smaller body size into account, was proposed.

The Norwegian Food Safety Authority (NFSA) is currently revising the national regulation of maximum limits in food supplements (not yet harmonised in the European Economic Area (EEA)), including maximum limits for vitamin D. NFSA has therefore requested the Norwegian Scientific Committee for Food Safety (VKM) to evaluate the assumption in the EFSA opinion that children and adolescents can tolerate the same amount of vitamin D as adults due to rapid bone formation and growth. In children and adolescents with lower weight than adults, this assumption actually implies that adolescents can tolerate more vitamin D per kg body weight than adults. VKM is therefore requested to evaluate if there is scientific evidence that a UL at 50 µg/day for children (1-10 years) and 100 µg/day for adolescents (11-17 years) is safe.

The present statement is prepared by members of the Panel on Nutrition, Dietetic Products and Novel Food and Allergy in VKM.

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Three literature searches were performed to find new relevant studies investigating high intakes of vitamin D in children and adolescents and the role of vitamin D in bone formation and growth.

No studies supporting a higher tolerance to vitamin D in children and adolescents due to rapid bone formation and growth were retrieved in the literature search. Moreover, there is apparently no firm association between bone formation and vitamin D levels in children during their growth period into adolescence and adulthood.

No studies investigating high intakes of vitamin D in children 1-10 years were found. Furthermore, no studies that have examined safety issues and/or adverse effects of vitamin D supplementation in doses above 50 µg/day in adolescents were identified. It can therefore not be concluded that the UL at 50 µg/day in children (1-10 years) and 100 µg/day in adolescents (11-17 years) is safe.

In the 2002 report from European Scientific Committee on Food (SCF), a UL was set at 25 µg/day for children aged 2-10 years, and 50 µg/day for adolescents aged 11-17 years (corresponding to the UL for adults at that time). To the best of knowledge no serious, harmful effects have been reported for these doses of vitamin D.

Keywords: VKM; Norwegian Scientific Committee for Food Safety; tolerable upper intake level; UL; vitamin D; children; adolescents.

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NOTE:

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COMPETING INTERESTS

Authors have declared that no competing interests exist.