



**Opinion of the Panel on animal feed of the
Norwegian Scientific Committee for Food Safety
25 april 2005**

**Comments on maximum limits for
fluorine in feed materials**

BACKGROUND

In February 2005 FEFAC (the European Feed Manufacturers Federation) submitted a document to the European Commission proposing to increase the maximum fluorine limits in marine krill. They also suggested raising the fluorine maximum limit in fish feed from 150 to 350 mg/kg.

The reasons given for proposing the increases in the document submitted to the European Commission were primarily related to background occurrence of fluorine in krill, as opposed to an assessment of the risk to the target animal or to the consumer, although brief reference were made to these issues.

The Norwegian Food Safety Authority has therefore requested the Norwegian Scientific Committee for Food Safety (VKM), Panel on animal feed, to comment whether the increase in the maximum limit for fluorine in feed materials - phosphates and marine crustaceans such as marine krill and fish feed proposed by FEFAC would pose a threat to fish health or to the consumer.

TERMS OF REFERENCE

The Norwegian Scientific Committee for Food Safety (VKM), Panel on animal feed, was requested by the Norwegian Food Safety Authority to comment whether the increase in the maximum limit for fluorine in feed materials - phosphates and marine crustaceans such as marine krill from 2000 mg kg⁻¹, 88 % dry matter to 4000 mg kg⁻¹, 88 % dry matter and complete feedingstuffs from 150 to 350 mg/kg would pose a threat to fish health or to the consumer.

COMMENT

There is limited information in the literature regarding the oral toxicity of fluoride in fish. Rainbow trout (*Onchorynchus mykiss*) were found to tolerate high fluoride concentrations (more than 2500 mg kg⁻¹ for 82 days) in their diet (Tiews *et al.*, 1982). Similarly, Julshamn *et al.* (2004) did not find any negative effects of dietary fluoride (given as krill meal) on growth or feeding efficiency in Atlantic salmon (*Salmo salar*) at dietary concentrations up to 358 mg kg⁻¹ for 3 months. Furthermore, there was no significant increase in either muscle, bone or

whole body fluoride levels in Atlantic salmon fed diets containing up to 358 mg kg⁻¹ for 3 months (Julshamn *et al.*, 2004).

Available results suggest that fish tolerate high levels of dietary fluoride in the form of krill meal (Tiews *et al.*, 1982; Julshamn *et al.*, 2004) considerably higher than the current maximum limit for fluorine in complete feedingstuffs for fish of 150 mg/kg. Fluoride levels are high in certain marine organisms such as krill (Julshamn *et al.*, 2004), which is a natural feed source for wild fish (Grønvik and Klemetsen, 1987). The transmission of fluoride (from feed) into edible tissues is limited, hence fluoride in food from animal origin contribute only marginally to human exposure (EFSA, 2004), and increasing the maximum limit for fluorine in the form of krill meal in complete feedingstuffs is therefore not expected to pose a threat to the consumer.

ASSESSED BY

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