



Comments on L-Histidine monohydrochloride monohydrate

Panel on animal feed, Norwegian Scientific Committee on Food Safety

Adopted 23 february 2005

Background

The Commission received a dossier in February last year for the authorisation of L-Histidine monohydrochloride monohydrate in fish feed for farmed salmon to be added to the list of technically pure amino acids and their salts most recently compiled in Commission Directive of 26 July 1988 amending the Annex to Council Directive 82/471/EC concerning certain products used in animal nutrition.

The Commission has however received some comments from member states that the L-Histidine monohydrochloride monohydrate dossier should be assessed under the veterinary medicines legislation. The background for this statement is the opinion that histidine is not merely intended for use as a feedingstuff, or as a constituent of a feed, but to help prevent the formation of cataracts in farmed fish.

Terms of reference

The Norwegian Food Safety Authority has asked the Norwegian Scientific Committee on Food Safety for their comments on whether L-Histidine monohydrochloride monohydrate to be used in fish feed for farmed salmon should be considered as an essential constituent in animal nutrition or as a pharmacologically active substance preventing cataract.

Introduction

Cataract is defined as an opacification of the lens or its capsule and has been described in both wild and farmed fish species in freshwater and seawater (Wall 1998). Several environmental and nutritional factors have been identified to cause cataract in fish. Rapid changes in water temperature, salinity, UV-radiation, toxins, infective agents, rapid growth and suboptimal nutrition are factors that have been identified. There has however been a special focus on the role of nutrition in cataractogenesis. Mammalian blood meal has previously been used extensively as a high quality protein in salmonid feed (Rasmussen, 1994) and outbreaks of severe cataracts seemed to coincide with the omission of blood meal in the diets (Wall 1998). Blood meal is especially high in histidine and phenylalanine and Breck et al. (2003) identified histidine and/or iron as the most probable nutritional components influencing cataract development. According to Breck et al. (2003) this can either be a result of nutritional deficiency of one or more components present in blood meal or linked to other nutritional or environmental factors. One or more constituents in blood meal evidently prevent, reduce or arrest cataract formation.

Comments

Histidine is an essential amino acid. Histidine has been reported to be a powerful antioxidant, and is involved in controlling oxidative stress caused by temperature fluctuations. A lack of this amino acid may cause deficiency symptoms when insufficient levels are present in animal feed. Increased incidence of cataracts in farmed fish has been attributed to low histidine content in fish feed (Breck et al., 2003) and supplementation is therefore considered necessary to prevent deficiency, rather than for medical purposes.

References:

Breck, O., Bjerås, E., Campell, P., Arnesen, P., Haldorsen, P. & Waagbø, R. (2003). Cataract preventive role of mammalian blood meal, histidine, iron and zinc in diets for Atlantic salmon (*Salmo salar* L.) of different strains. *Aquaculture Nutrition*, 9: 341-350.

Rasmussen, K.J. (1994). Spray-dried blood diets to Atlantic salmon (*Salmo salar* L.) Fisk. Dir. Skr. Ser. Ernæring, 6, 151-161.

Wall, A.E. (1998). Cataracts in farmed salmon (*Salmo salar*) in Ireland, Norway and Scotland from 1995 to 1997. *Vet. Rec.*, 142, 626-631.