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# 178 – Nutritional diseases XI





## Nicotinic acid

Nicotinic acid, also known as niacin, is a key component of two coenzymes, namely, nicotinamide adenine dinucleotide (NAD) and nicotinamide adenine dinucleotide phosphate (NADP). These are critical for more than 200 chemical reactions in the bird's body related to the metabolism of fatty acids, carbohydrates, amino acids and nucleic acids.

Niacin can be synthesised from tryptophan, although this is not a very efficient process in ducks or turkeys. Poultry diets rarely contain adequate tryptophan and so supplementation with the amino acid and/or niacin is required. Niacin supplementation should never exceed 0.75% otherwise thinning and weakening of bones may occur.

## Clinical signs and pathology

Severe deficiency appears as anorexia, depressed growth, inflammation of the oral cavity, poor feathering, dermatitis and chondrodystrophy (enlargement) of the hock joints, coupled to bowing of the legs/perosis. The perosis is not as severe as that seen in other conditions and the Achilles tendon rarely slips out of position.

The tongue of deficient chicks can become necrotic and blackened. Poults and ducklings, as well as manifesting the above conditions, can show signs of diarrhoea.

Niacin deficiency produces duodenal and pancreatic lesions similar to those seen in thiamin deficiency. Adult chickens and turkeys do not show signs of niacin deficiency but this vitamin is required for optimal egg weight and hatchability.

## Treatment

Treatment is by replacement therapy via the feed or water. However, once the Achilles tendon has slipped, treatment has little effect.