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Farmers’ and academia’s views”

## Potential applications of amino acids supplementation for captive breeding of cervids in South-East Asia

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### Abstract

Deer farming is a thriving industry for venison, trophy hunting, and especially velvet antler which oriented as the main product for traditional medicines in Southeast Asia. Feeding and nutrition are important factors for improving production performance, especially protein and amino acids (AA), as they are the main components of all tissues. In deer nutrition, during velvet and antler growth deer requires 16 % - 22 % crude protein. It is also very crucial for supporting growth of young, reproduction, pregnancy, and lactation. However, feeding protein and AA in tropical climate is challenging because of hot environments which can limit intake and poor digestibility from protein sources in this area. Therefore, improving AA balance via supplementary feeding can be an effective alternative to fulfil protein requirements in tropical climate. Despite, the importance and the potential of AA in cervid nutrition, it is still very limited compared to other ruminant livestock.

Only a few studies on AA supplementation (Lysine, Methionine, Arginine) have been carried out on cervids. These AA have shown to increase growth performance such as body weight, feed intake, nutrient digestibility, carcass weight, body condition scores, meat quality, rumen health, and especially velvet (velvet yield) and antler growth (antler burr perimeter, weight, length, mineralisation). Therefore, this review provides an overview of the current status of deer farming and utilisation, and the effects of AA supplementation on growth and production in ruminant livestock and cervids, based on approximate metabolic body weights. Furthermore, the potential effects of AA that have not yet been studied in cervids is also discussed, especially oriented to benefit to deer farming in tropical climate conditions.

**Keywords:** Antlers, deer, feed additives, protein, ruminants, Venison