

THEME 7 | NONRUMINANT NUTRITION AND PRODUCTION

**Ambient temperature do not affects branched-chain amino acids
postprandial metabolism in growing pigs**

Vinícius E. Moreira*¹, Paulo H. R. F. Campos¹, Elodie Merlot², David Renaudeau², Jean Noblet², Nathalie Le Floc'h²

¹Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina/MG, Brazil;

²UMR 1348 PEGASE, Agrocampus Ouest, INRA, 35590 Saint-Gilles, France

*Undergraduate student – viniciusdtna@gmail.com

The branched-chain amino acids leucine, isoleucine and valine are indispensable amino acids because they cannot be synthesized by the pig and therefore must be obtained from the diet to maintain growth and health. In hot conditions, pigs decrease nutrients intake to reduce heat production associated with digestive and metabolic processes. Therefore, ambient temperature is supposed to induce changes on amino acids partitioning and utilization. In this regard, the objective of this study was to evaluate the effects of ambient temperature on leucine, isoleucine and valine postprandial metabolism. Twenty-eight growing pigs equipped with a jugular catheter were divided into two groups and housed in thermo-neutral (TN, 24°C) or high (HT, 30°C) ambient temperature-controlled rooms. Pigs remained in the temperature-controlled rooms for a period of 21 days divided in a 14 days adaptation period and a subsequent seven days experimental period (from day 1 to 7). On day 4, all the animals received 300 g of feed after a fasting period overnight, and serial blood samples (4 mL) of each animal were collected over a period of four hours in order to measure plasma amino acids concentrations. Amino acids postprandial concentrations were analyzed using the linear MIXED procedure of SAS including the fixed effects of ambient temperature. The analysis of postprandial amino acids variations suggests negligible direct effects of high ambient temperature on leucine, isoleucine and valine. This absence of significant effects might be explained by the prior acclimation of pigs to the high ambient temperature. Accordingly, previous studies have demonstrated that adaptation of pigs to an ambient temperature of 30°C required three to four days.

Keywords: heat stress, isoleucine, leucine, nutrients, valine

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