

**THEME 7 | NONRUMINANT NUTRITION AND PRODUCTION**

**Effects of ambient temperature on the postprandial metabolism of limiting essential amino acids in growing pigs**

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High ambient temperature is one of the major environmental factors limiting animal production in tropical and subtropical areas. Pig production is particularly affected because of the high sensitivity of pigs to high ambient temperatures due to their limited capacity to dissipate heat and the high metabolic heat production of modern genotypes. The consequences of high temperature on pigs include the well described reduction in voluntary feed intake and growth but also changes on hormones and nutrients metabolism. In this regard, the objective of this study was to evaluate the effects of ambient temperature on lysine, threonine and tryptophan 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. A similar response profile was observed for the three evaluated amino acids (lysine, tryptophan and threonine) in which plasma concentrations increased immediately after the meal intake, reached peak values between 40 and 70 minutes, and decreased thereafter. According to our results, ambient temperature did not affect the postprandial profiles of the amino acids ( $P > 0.05$ ) suggesting that pigs kept at 30°C had rather close metabolic statuses to those kept at 24°C in terms of lysine, tryptophan and threonine utilization.

**Keywords:** heat stress, lysine, nutrients, threonine, tryptophan

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