



Dr. Ming Z. Fan

MARTIN SCHWALBE

Guelph researchers have found additional support for this view after measuring the level of the stress hormone cortisol following two procedures, one more stressful than the other

results led researchers to see a direct connection between the level of stress and the pig's ability to grow and thrive.

Administering a dose through a catheter is a lot less stressful than when a similar dose is administered by direct injection into the abdominal cavity. The immediate result was the increased levels of cortisol that were injected directly into their abdominal cavity. "The observation is that raising the stress level reduces the pigs' ability to grow muscle – synthesis of muscle proteins," Fan says, adding that "the increased levels of blood cortisol show up very quickly, within 30 minutes of a stress event."

Furthermore, says Fan, "muscle protein synthesis goes down when they are stressed, so they wouldn't be developing muscles at the same rate if they are stressed. They won't grow as much muscle protein."

Fan says that behavioural scientists have done a lot of work to show how handling can affect market outcomes. This research measures the hormone levels and muscle

When stress goes up, muscle protein goes down

by MIKE MULHERN

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Researchers and farmers alike have long known that stress reduces the rate of gain in animals. Now, researchers have additional proof.

A team from the University of Guelph led by Ming Z. Fan, Associate Professor in Nutritional Ecology, has measured levels of the stress hormone cortisol in animals after two procedures, one more stressful than the other. Increased blood level of cortisol reduces the pig's ability to grow muscle, potentially producing an adverse effect on the pig's market weight and quality.

The original objective was to compare the protein synthesis rate in organs and tissues when doses of a stable isotope tracer, phenylalanine, in saline were delivered, either via intraperitoneal injection or by means of a surgically placed interavenous catheter.

While the objective was to compare protein synthesis rates depending on two routes of tracer delivery techniques, the

protein synthesis, and demonstrates that stress very quickly leads to negative outcomes on muscle biochemical and physiological activities.

Farm neighbors who employ the same feeding facilities and feed suppliers may have very different market outcomes, he said, depending on their animal handling methods and the way staff interact with the animals.

"Some things can be attributed to genetics," Fan says, "but if similar animals have a different growth rate or quality, likely the handling has made a difference." Even the way animals are fed can lead to stress and poor meat quality. He recommends that farmers train staff members to interact calmly and kindly with animals, much the way they would expect others to interact with them.