

Keywords

Nrf2, oxidative stress, reporter mice, omega-3

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JOURNAL HOME PAGEriviste.unimi.it/index.php/hafUNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI SCIENZE VETERINARIE
PER LA SALUTE, LA PRODUZIONE ANIMALE
E LA SICUREZZA ALIMENTARE

Nuclear factor E2-related factor 2's activation in transgenic mice fed with high dosage of fish oil.

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Abstract

Some fatty acids, such as CLA (conjugated linoleic acid) and n-3 fatty acids modulate immune and inflammatory response in ruminants and monogastrics; their supplementation alters fatty acids profile of meat and milk, enhancing their nutritional quality. However, it is still unclear if their addition causes oxidative damage to animals. Nuclear factor E2-related factor 2 (Nrf2) plays an important role in cellular defenses against oxidative stress, indeed it produces a rapid induction of its target genes involved in antioxidant response. The aim of the project is to investigate the activation of Nrf2 in luciferase reporter mice fed different amount of n-3 PUFA in the diet (7,5% lard, 7,5% tuna oil, 20 % lard and 20% tuna oil). Forty-eight reporter mice are divided into three groups: male, intact female and ovariectomized female. Each group is split in four subgroups fed different diets. Oxidative status will be studied monitoring Nrf2's activation with *in vivo* bioluminescent imaging. The inflammatory and immune response will be assessed using calprotectin and lactoferrin levels in faecal samples that are non-invasive techniques. The trial is still in progress: on the 62nd day, animals will be sacrificed after a challenge in order to measure the different effects of diets and +/- oestrogen on stress response. Finally, the post mortem analysis will be carried on extract organs. Data obtained will be analysed using statistical procedures and results will improve the knowledge about interaction between omega-3 fatty acids and animals' oxidative status.

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