

# Methane production reduced in ruminants

May 3 2016

---



Cows on a dairy farm in Spain's northern region of Navarra. Credit: CSIC

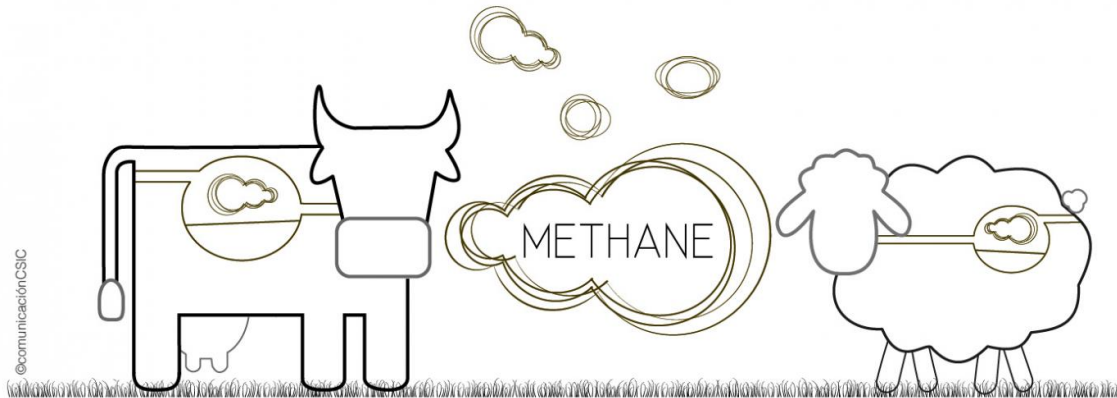
Researchers at the Spanish National Research Council (CSIC) have taken part in a study of the effect of one molecule, 3-nitrooxypropanol, in inhibiting methane production in ruminants. The work has been

published in the *Proceedings of the National Academy of Sciences (PNAS)*.

Ruminants are animals that digest their food through fermentation carried out by microorganisms living in the rumen. This process produces organic acids: [acetic acid](#), propionic acid, and [butyric acid](#), all of which are absorbed and metabolized by the organism as a source of energy. But in addition, the process also produces methane, which escapes into the atmosphere in the form of gas.

## **How 3-nitrooxypropanol works**

By 2014, scientists had demonstrated the effectiveness of this molecule in sheep, but were unaware of how it actually worked. The current in vivo research used incubated [anaerobic microorganisms](#) from ruminants' digestive systems to reveal that the compound 3-nitrooxypropanol only affects methane-producing microorganisms (arqueas methanogens) and not the bacteria that contribute to digestion. As David Yáñez, a CSIC researcher at the Zaidin Experimental Research Centre in Granada (southern Spain) explains, "Up until now, no one had described the mode of action of a compound that can repeatedly reduce (by 30 percent) [methane production](#) in animals without any risks, either to the animal's health, or to their productivity."



Livestock farming is responsible for 18 percent of the world's greenhouse gases, and ruminants such as cattle, sheep and goats generate 35 percent of one of these gases -- methane, and according to experts they make a significant contribution to climate change. Credit: Comunicación CSIC

The results of this work open up the possibility of reducing [methane emissions](#) and contributing to a reduction in global temperatures caused by greenhouse gases. In addition, Yáñez says, "We will see an increase in the efficiency of ruminant production systems as better use is made of the energy taken in in animal feed, given that methane production accounts for a loss of up to 12% of the energy an animal ingests."

**More information:** [DOI: 10.1073/pnas.1600298113](https://doi.org/10.1073/pnas.1600298113)

Provided by Spanish National Research Council (CSIC)

Citation: Methane production reduced in ruminants (2016, May 3) retrieved 18 April 2024 from

<https://phys.org/news/2016-05-methane-production-ruminants.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.