Spice leaves sheep smelling sweeter

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(PhysOrg.com) -- Forget low-energy lightbulbs and solar-powered homes - curry spices could hold the key to reducing greenhouse gas emissions.

Research carried out at Newcastle University has found that coriander and turmeric - spices traditionally used to flavour curries - can reduce the amount of methane produced by bacteria in a sheep's stomach by up to 40pc.

Working a bit like an antibiotic, the spices were found to kill the methane-producing 'bad' bacteria in the animal's gut while allowing the 'good' bacteria to flourish.

The findings are part of an on-going study by Newcastle University research student Mohammad Mehedi Hasan and Dr Abdul Shakoor Chaudhry - the most recent part of which is published this week in the Asian-Australasian Journal of Animal Sciences 2010.

Mehedi explained: "Spices have long been used safely by humans to kill bacteria and treat a variety of ailments - coriander seeds, for example, are often prescribed for stomach complaints while turmeric and cloves are strong antiseptics.

"Methane is a major contributor to global warming and the slow digestive system of ruminant animals such as cows and sheep makes them a key producer of the gas.

"What my research found was that certain spices contain properties which make this digestive process more efficient so producing less waste - in this case, methane."

Latest figures held by Defra show that in 2009 there was an estimated 30 million sheep in the UK each producing around 20litres of methane a day. As well as the environmental implications of this, the sheep also wastes vital energy, losing an estimated 12pc of its food energy to methane production which results in a lower milk and meat yield. In recent years, antibiotics were added to feed but these were banned by the European Union in 2006.

The Newcastle study looked at five curry spices - cumin, coriander, clove, turmeric and cinnamon. Each was 'ground up' - as if chewed by the sheep - and added to an in-vitro solution mimicking that found in the rumen of a sheep. The level of methane released by each was measured against a control.

The most effective was found to be coriander which reduced methane production from 14ml/gram of 'food' to 8ml/g - a drop of 40pc. Turmeric produced a 30pc reduction and cumin a 22pc.

Chemical analysis carried out during the study suggests the high levels of unsaturated fatty acids found in coriander seeds are likely to be responsible for the large reduction in methane gas.

Although the research was carried out using bacteria taken from a sheep's gut, project supervisor Dr Chaudhry said they expected the results to be mirrored in other ruminants such as cows and goats.

"The rumen fluid in cows and sheep is very similar so we would expect to see an equally significant reduction in methane in cattle and other ruminant animals," he explained.

“With an estimated 10 million cows in the UK, each producing around 500 litres of methane a day, that would be a significant reduction.”

Dr Chaudhry added: “Since antibiotics were banned, the hunt is on for new, safe, cheap ways to reduce methane production in ruminants.

“Plants like coriander are an ideal solution, especially in parts of the world where expensive treatments are not an option.”

Provided by Newcastle University