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Methane-suppressing effect in sheep of three medicinal plants using *in vitro* gas production technique

Medjekal Samir[1], **Ghadbane Mouloud**[1] and **Bousseboua Hacene**[2]
[1]University Mohamed Boudiaf-M´Sila, Algeria
[2]Ecole Nationale Supérieure de Biotechnologie, Algeria

Ruminants are major contributors to biogenic methane formation, and it has been estimated that preventing methane formation from domesticated ruminants could contribute to stabilizing atmospheric methane concentrations. Moreover, several thousand plant secondary metabolites have been reported, for example, phenolic compounds, essential oils and sarsaponins have antimicrobial activity. The objectives of this *in vitro* study were to compare fermentation patterns of three selected traditional medicinal plants and to evaluate their potential as antimethanogenic additives in ruminant feeds. Effects of *Nigella sativa, Rosmarinus Officinalis* and *Zingiber Officinale*, which were incorporated to the fermentation substrate as a dry powder, on ruminal fermentation, fibre digestion and methane production, were studied *in vitro* in batch cultures of mixed rumen microorganisms. After incubation, gas and methane production, pH and volatile fatty acid (VFA) concentration in the incubation medium and dry matter and neutral detergent fibre disappearance were recorded. In general, a high methane reduction was noted with Monensin (control) and *Nigella sativa* and no effect was observed with the other treatments. The amounts of methane produced after 24 hours of fermentation varies between 0.28 and 1.12 mmol/g DM. Monensin drives the highest percentage reduction, with a value of 75% and *Nigella sativa* recorded a 20% reduction in value. This study should be complemented by other *in vitro* investigations to determine the dose effect of *Nigella sativa* and also studies by the Rusitec to ensure stability in time of the observed effects.

Biography

Medjekal Samir has completed his PhD from Constantine University. He has published more than 10 papers in reputed journals.

sammedj2008@gmail.com

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