



4th National Congress on Medicinal Plants
12, 13 May 2015
Tehran- Iran



ISSN 1735-0328



A Quarterly Publication of the School of Pharmacy
Shaheed Beheshti University of Medical Sciences

Proceedings of the 4th
National Congress of Medicinal Plants
12, 13 May 2015, Tehran

Iranian
Journal of
Pharmaceutical
Research

IJPR

Iranian
Journal of
Pharmaceutical
Research

Volume 14, 2015, Supplement 2



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**MEDICINAL PLANT ESSENTIAL OILS REDUCE RUMINAL AND FECAL
ESCHERICHIA COLI O157:H7 POPULATION IN BEEF CATTLE**

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Cattle are reservoirs of the pathogenic bacteria *E. coli* strain O157:H7, and approximately 30% of feedlot cattle shed *Escherichia coli* O157:H7. Feedlot cattle are fed high grain rations in order to increase feed efficiency. It has been reported that populations of *E. coli* O157:H7 were higher in grain-fed than in forage-fed cattle, and when cattle were abruptly switched from a high grain diet to an all hay diet, total *E. coli* populations declined 1000-fold [2]. Therefore, strategies that reduce *E. coli* O157:H7 prior to slaughter will reduce human exposures to this virulent pathogen. However, a dietary switch to forage in feedlots is not advocated due to feasibility, weight loss and other logistical issues, other feedstuffs rich in phenolics or essential oils (EO) may be a more feasible alternative strategy to decrease *E. coli* O157:H7 populations [2]. Essential oils are secondary metabolites present in many plants, and data available show a strong bactericidal activity of a number of EO against pathogenic bacteria such as *E. coli* O157:H7 [1]. Among the EO, thyme (THY) and cinnamon (CIN) oil have attracted considerable attention in several research studies because of their potential antimicrobial activity against ruminal microorganisms [1]. The objective of the present study was to evaluate the effects of THY and CIN on *E. coli* O157:H7 population in the rumen and feces of feedlot calves fed high-concentrate diets. Sixteen growing Holstein calves (213±17 kg initial BW) were used in a completely randomized design and received their respective dietary treatments for 45 d. Treatments were: 1-control (no additive), 2-THY (5 g/d/calf), 3-CIN (5 g/d/calf) and 4- forage (sudden switch from grain diet to forage diet in the last week of experiment; as positive control). Calves were fed *ad libitum* diets consisting of 15% forage and 85% concentrate. Ruminal and fecal samples were collected from animals at the end of the experiment. Quantitative detection of *E. coli* O157:H7 in samples were done using specific primers and real-time PCR method. The relative abundances of *E. coli* O157:H7 were determined using total bacteria as reference according to the $2^{-\Delta\Delta C_t}$ method and reported as fold change compared with control. The relative abundances of *E. coli* O157:H7 decreased ($P<0.05$) in the rumen of calves when supplemented with additives. Treatments also decreased *E. coli* O157:H7 population in the feces of feedlot calves. Results suggest that the medicinal plant EO could potentially be used to control enterohemorrhagic *E.coli* colonization in cattle.

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