each treatment and MCP was measured by real-time PCR. Microbial markers used are from the 16S rRNA gene, 18S rRNA gene and the II chromosome; for bacteria, protozoa and yeast, respectively. Data were analyzed as a completely randomized design with repeated measures to test the effects of treatments and fermentation time. Treatment did not affect ($P = 0.18$) mean bacterial CP which was observed to be 157.22 ± 16.53 mg/g DM across treatment. However, a treatment by time interaction was observed ($P < 0.05$). Specifically, at 16 h the RCS diet yielded higher ($P < 0.01$) bacterial CP than CONT (306.32 and 141.37 ± 49.97 mg/g DM for RCS and CONT respectively). However, at 32 h only the RS yielded higher ($P < 0.01$) bacterial CP than the CONT (393.08 and 251.15 ± 49.97 mg/g DM for RS and CONT respectively). In addition, compared with the CONT, bacterial CP of RCS tended ($P = 0.07$) to increase (343.67 and 251.15 ± 49.97 mg/g DM for RCS and CONT respectively). At 32 h the RS and RCS diet yielded higher ($P < 0.01$) protozoa CP when compared with the CONT (209.31, 165.38 and 117.64 ± 15.01 mg/g DM for RS, RCS and CONT respectively). Treatment did not affect ($P = 0.51$) yeast CP and averaged 0.03 ± 0.02 mg/g DM. Overall, bacterial and protozoal growth was improved when DDGS replaced SBM and it was maintained when DDGS replaced GC.

Key words: DDGS, microbial crude protein, real-time PCR

M380 Effects of semi-arid medicinal herb essential oils on growth of pure culture of *Butyrivibrio fibrisolvens* SH13. H. Jahani-Azizabadi*[1], M. Danesh Mesgaran[1], A. R. Vakili[1], and K. Rezayazdi[2], *[1]Dept. of Animal Science, Excellence Center for Animal Science, Faculty of Agriculture, Ferdowsi University of Mashhad, Mashhad, Khorasan Razavi, Iran, [2]Dept. of Animal Science, Faculty of Agriculture, University of Tehran, Karaj, Tehran, Iran.*

The objective of the present study was to investigate the effect of some semi-arid medicinal herb essential oils (EO) on Butyrivibrio fibrisolvens SH13 growth characteristics. The liquid version of Hobson's M2 medium (Hobson, 1969) in Hungate tubes was used to estimate sensitivity of *Butyrivibrio fibrisolvens* SH13 to semi-arid native cinnamon, thyme and coriander essential oils. *Butyrivibrio fibrisolvens* SH13 stock culture was grown anaerobically in M2 medium in 125-mL bottles for 16 h at 38.6°C before testing. *Butyrivibrio fibrisolvens* SH13 was obtained from the Rowett Research Institute (Aberdeen, UK) culture collection. After the medium was autoclaved, each essential oil was applied to give a concentration ranging from 0.0 (as control) to 10, 20, 40, 80, 120, 180, 240, and 360 ppm (4replicates). Essential oils were previously dissolved in equal volume of ethanol. All cultures were grown anaerobically at 38.6°C using an inoculum from stationary phase of stock culture (5% of v/v) for 24 h. The concentration of a EO at which the *Butyrivibrio fibrisolvens* SH13 growth was half of that measured in the control (IC50) was recorded during 24 h of incubation. *Butyrivibrio fibrisolvens* SH13 growth was measured by hourly reading optical density of the medium at 650 nm (OD650). As presented in Table 1, when each EO applied to the culture medium inhibited the growth of *Butyrivibrio fibrisolvens* SH13 at the concentration of higher than 240 ppm. An increase in the concentration of coriander EO (UP to 240 ppm) led to increase *Butyrivibrio fibrisolvens* SH13 OD650 compared with those of the control ($P < 0.05$). Results of the present study demonstrated that the essential oils might alter growth pattern of *Butyrivibrio fibrisolvens* SH13.

Table 1. The concentration of semi-arid medicinal plant essential oils at which the *Butyrivibrio fibrisolvens* SH13 growth was half of that measured in the control (IC50) during 24 h of incubation

	IC50 of EO (ppm)
Cinnamon	≥360
Coriander	>360
Thyme	≥240

Key words: *Butyrivibrio fibrisolvens*, coriander, essential oil

M381 Effects of microbial contamination on in situ estimates of ruminal degradability of fiber fractions. J. M. Arroyo, J. Guevara-González, F. Díaz-Royon*, and J. González, *Universidad Politécnica de Madrid, Madrid, Spain.*

Measures of ruminal digestibility of fiber constituents are usually considered as truly estimates. However, vegetable feeds are subjected, during its rumen residence, to a microbial contamination, which is especially high in rich fibrous feeds. Therefore, errors may occur if the fiber determination methods are not able to remove this contamination, as it is normally assumed. The microbial contamination of the neutral and acid detergent fractions (NDF and ADF) and of their N components (NDIN and ADIN, respectively) of in situ incubated residues of a fibrous Italian ryegrass (*Lolium multiflorum*) hay was determined as well as the associated effects on the ruminal degradation estimates. Hay samples (ground to pass a 2-mm screen) were incubated for 72 h in nylon bags (46 μm pore size) on 3 ruminally cannulated wethers fed with 75 g /$Kg^{0.75}$ of a 40:60 Italian ryegrass hay to concentrate diet. Incubations were performed in stable conditions of ^{15}N infusion (30 mg ^{15}N per day) and solid-associated bacteria were isolated and used as reference sample to control contamination. Analyses of NDF, ADF, as well as of N and ^{15}N abundance of both fiber fractions were performed. Effects of microbial contamination were determined by one-way variance analysis. Microbial contribution to NDF, ADF, NDIN and ADIN in the tested sample was 4.14, 0.45, 65.1 and 15.9%, respectively. The lack of contamination correction led to underevaluations of ruminal degradation: 22.4% (89.8 vs. 69.7%) for NDIN, 4.7% (79.4 vs. 75.7%) for ADIN, 2.3% (65.0 vs. 63.5%) for NDF and 0.3% (63.6 vs. 63.4%) for ADF ($P < 0.001$). The procedures of fiber fractioning with detergent solutions do not promote the total detachment of microorganisms adhered to fiber residues of rumen incubated samples leading to large errors for the concentration and degradation of NDIN and ADIN. The associated errors are moderate for NDF and very low for ADF.

Key words: fiber, microbial contamination, ruminal degradation

M382 Measurement of dry matter degradation of sugar cane molasses in rumen of bovine using nylon bag technique. J. J. Lomeli*[1], L. R. Flores[1], R. H. Ley[1], J. E. Guerra[2], I. Quintero[1], J. E. Borbolla[1], and R. Barajas[1], *[1]FMVZ-Universidad Autonóma de Sinaloa, Culiacán, Sinaloa, México, [2]FA-Universidad Autónoma de Sinaloa, Culiacán, Sinaloa, México.*

With the objective of determine the degradation of dry matter of sugar cane molasses in the rumen of bovine using nylon bag technique 2 experiments were performed. Two cows fitted with 10 cm ID cannula and fed a 70% concentrate diet (14.7% CP; NEm 1.73 Mcal/kg) containing 10% of sugar cane molasses were used. Exp. 1: Nylon bags (10 x15 cm) were filled with a combination of ground corn and rewashed oven-dried river-sand in proportions of 100, 90, 80, 70, 60, 50, 40, 30,