



Research article

Effect of olive and date palm by-products on rumen methanogenic community in Barki sheep

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Table S1. Physical composition (%) of the experimental rations.

Ingredients	Farm ration	Experimental rations	
	S1	S2	S3
Corn granis	22.5	10.0	10.0
Wheat grains	22.5	0	0
Soybean meal	11.0	17.0	17.0
CFM*	44	0	0
Olive cake	0	10.0	10.0
Discarded dates	0	60.0	60.0
Mineral & Vitamins	0	0.3	0.3
Salt	0	1.0	1.0
Lime stone	0	1.3	1.3
Yeast	0	0.3	0.3
Anti-fungi	0	0.1	0.1

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Ingredients	Farm ration	Experimental rations	
	S1	S2	S3
Total	100	100	100
Roughage	0	0	+
R: C ratio	0/100	0/100	25/75

*Note: CFM (14% CP and 65%TDN): concentrate feed mixture consisted of corn 55%, un-decorticated sunflower seed meal 12%, soybean meal 10%, wheat bran 17%, vinas 3%, lime stone 1.5%, salt 1%, premix 0.5%.

Table S2. Chemical composition of concentrate feed mixture and Date palm.

Items	Concentrate feed mixture	Date palm fronds	
	CC	UC	
Dry matter; DM (g/kg)	924.1	954.5	986.7
Crude protein; CP (g/kg DM)	200.0	185.2	75.3
Crude fiber; CF (g/kg DM)	48.0	95.1	298.4
Ether extract; EE (g/kg DM)	2.43	5.53	2.16
Nitrogen free extract; NFE (g/kg DM)	678.2	568.8	491.0
Neutral detergent fiber NDF (g/kg DM)	551.0	368.8	538.9
Acid detergent fiber; ADF (g/kg DM)	85.3	184.7	359.8
Gross energy; GE (MJ/kg DM)	18.15	18.13	16.92

Table S3. The raw data of rumen pH, VFA, and ammonia as affected by diet type.

Diet	pH	Ammonia	VFA
S1	4.99	6.71	12.40
S1	5.07	6.55	13.10
S1	4.90	6.61	13.80
S2	5.18	2.96	9.10
S2	5.25	3.09	8.90
S2	5.10	2.92	8.30
S3	5.85	3.09	8.90
S3	5.73	2.86	8.75
S3	6.15	2.94	8.60



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