

Animal

Using dried orange pulp in the diet of dairy goats: effects on milk yield and composition and blood parameters of dams and growth performance and carcass quality of kids

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Supplementary Material S1

Total antioxidant capacity (TAC) assessed by DPPH assay in feed samples

Total antioxidant capacity (TAC) was analysed by DPPH assay (2,2-diphenyl-1-picrylhydrazyl) as described by Shin *et al.* (2018). In brief, 20–50 mg of sample was added to 50 ml of 101 µmol/l DPPH in 50% aqueous methanol. The flask was capped and incubated at 37°C for 4 h. After incubation, the mixture was filtered through Whatman no. 1 filter paper, and absorbance measured at 515 nm using a UV/Vis spectrophotometer (Lambda 35, Perkin Elmer, Waltham, MA, USA). A DPPH solution

with no added sample was used as a blank solution. The water-soluble vitamin E analogue Trolox was used as a standard for antioxidant capacity and TAC was expressed as mmol Trolox equivalents/kg of sample.

Supplementary Material S2

Total phenolic compounds in feed samples

Total phenolic compounds were estimated in methanol-acetone extracts from feedstuffs and a subsequent analysis using Folin–Ciocalteu reagent, according to the procedure described by Seiquer *et al* (2015), with some modifications. In brief, 250 mg of the sample was mixed with 5 ml of acidic methanol/water (50:50 v/v, pH 2), shaken for 60 min at 220 rpm and centrifuged at 2500 rpm for 10 min at 4°C. The supernatant was recovered and a second extraction was performed after adding 5 ml of acetone/water (70:30, v/v) to the residue. The supernatants were combined and the solution was made up to 5 ml with Milli-Q water, which was then used for phenolic compound determinations. The sample extracted (100 µl) and 100 µl of Folin–Ciocalteu reagent were mixed in 96-well multiwell plates and let stand for 3 min. Then, 2000 µl of 7% (75 g/l) sodium carbonate solution was added, the volume was made up to 2500 µl with Milli-Q water, mixed and allowed to stand in the dark for 60 min. Absorbance was measured at 750 nm using a UV/Vis spectrophotometer against a standard curve for gallic acid (GA; 0–200 mg/l). Phenolic compounds were expressed as g of GA equivalents/kg of DM.

Supplementary Material S3

Fatty acid composition in milk and feed samples

Feed samples and a freeze-dried aliquot of each milk sample stored at –20°C were used for gas chromatography analyses for fatty acids (FAs), according to the procedures described by Delgado-Pertíñez *et al.* (2013) and Gutiérrez-Peña *et al.* (2018). Fat extraction and direct methylation of FAs were performed with a single-step procedure based on the method of Sukhija and Palmquist (1988) and revised by Juárez *et al.* (2008)

to minimise isomerisation and epimerisation in conjugated linoleic acid (CLA). In brief, 1 ml of n-hexane and 3 ml of freshly made 5% by weight methanolic HCl were added to 0.1 g of freeze-dried milk or 0.5 g of feed samples, vortexed and heated for 90 min in a water bath at 70°C. After the contents were cooled to room temperature, 5 ml of 6% by weight K₂CO₃ was added, followed by 2 ml of n-hexane. The contents of the tubes were vortexed, followed by centrifugation at 3500 rpm for 10 min. The upper organic phase was transferred to a culture tube and 1 ml of NaSO₄ was added, and finally dissolved in 1 ml of n-hexane for gas chromatography analysis. Separation and quantification of the FA methyl esters (FAMES) were carried out using a gas chromatograph (Agilent 6890N Network GS System, Agilent, Santa Clara, CA, USA), equipped with a flame-ionisation detector (FID) and automatic sample injector HP 7683, and fitted with an HP-88 J&W fused silica capillary column (100 m, 0.25 mm i.d., 0.2-µm film thickness; Agilent Technologies Spain, S.L., Madrid, Spain). The chromatographic conditions were as follows: the initial column temperature was 100°C, increasing at a rate of 3°C/min up to 158°C and then at 1.5°C/min up to 190°C, and maintaining this temperature for 15 min, then at 2°C/min up to 200°C, and then increasing again at 10°C/min up to a final temperature of 240°C, holding for 10 min. Injection and detector temperatures were maintained at 300°C and 320°C, respectively. Hydrogen was used as the carrier gas at a flow rate of 2.7 ml/min. The split ratio was 17.7:1, and 1 µl of solution was injected. Response linearity, recovery factor, precision, repeatability and reproducibility of the method were detailed by Juárez et al. (2008). Nonanoic acid methyl ester (C9:0 ME) at 4 mg/ml was used as an internal standard (Sigma Aldrich Co., Madrid, Spain). Individual FAs were identified by comparing their retention times with those of an authenticated standard FA mix Supelco 37 (Sigma). The CLA isomers (cis9-trans11 and trans10-cis12) were identified by comparing retention times with those of another authenticated standard (Matreya, LLC, Pleasant Gap, USA). Fatty acid content was expressed as absolute values in mg/g DM units.

Supplementary Material S4

Fat-soluble vitamins (A and E) in milk and feed samples

Vitamins were extracted from samples according to the method described by Herrero-Barbudo *et al.* (2005), with the following minor modifications (Gutiérrez-Peña *et al.*, 2018). In brief, 1.5 to 2 ml of milk tempered at 30°C or 2 g of the feed sample was subjected to alkaline hydrolysis after homogenisation, adding 1.5 ml of a solution of 0.3 M ascorbic acid. Subsequently, 2 ml of potassium hydroxide in methanol at 40% (w/v) was added. This blend was stirred in a water bath at 70°C and 200 rpm for 40 min. Free forms of retinol and tocopherol were extracted by adding a blend of two organic solvents in 4:1 (v/v): first, n-hexane containing 0.01% of butylated hydroxytoluene (w/v) and dichloromethane in a proportion of 5:1 (v/v), and then, isopropanol. The emulsion was cooled and centrifuged at 5000 rpm for 4 min. The aqueous phase was again subjected to extraction four times. The organic phases were collected and combined, washed with 3 ml of cold water, and then recentrifuged for 2 min at 2000 rpm. The organic phase was evaporated under a nitrogen flow, and the extract was finally reconstituted in 1 ml of acetonitrile/methanol (85:15, v/v) and filtered using a syringe filter with a 0.2 µm pore. Chromatographic analysis of vitamins was performed according to Chauveau-Duriot *et al.* (2010), with the following minor modifications (Gutiérrez-Peña *et al.*, 2018). The analysis was carried out on an Acquity UPLC, with a fluorimetric detector and isocratic pump, PDA and 150 × 2.1 mm Acquity UPLC HSS T3 1.8-µm column (Waters, Saint-Quentin-en-Yvelines; France). The following method was used for chromatographic separation of retinol: isocratic regime, mobile phase with acetonitrile:methanol (85:15, v/v)/isopropanol:water (50:50, v/v) in 80/20 (v/v) and fluorimetric detection at λ_{exc} = 325 nm and emission at 475 nm, respectively. For separation of the different forms of tocopherol, the mobile phase consisted of acetonitrile:methanol (85:15)/isopropanol in 90/10 (v/v) proportion, and fluorimetric detection was performed at λ_{exc} = 295 nm and emission at 330 nm, respectively. In both cases the flow was 0.4 ml/min and column temperature was 35°C. The wavelength range for PDA varied from 275 to 465 nm.

Tocopherols and retinol were positively identified by comparing their retention times with those of high purity standards of the measured substances (all-trans-retinol, α -tocopherol, β -tocopherol, and γ -tocopherol; Sigma). Other standards of high purity (retinyl acetate, retinyl palmitate, tocopheryl acetate; Sigma) were used as internal standards and for testing prior saponification and recovery. The vitamin content was expressed as $\mu\text{g}/100\text{ g}$.

Supplementary Material S5

Carcass measurements

Dressing carcass percentages and chilling losses were calculated, with values for hot carcass weight (HCW), farm live weight (FLW), slaughter live weight (SLW), cold carcass weight (CCW), and empty body weight (EBW), as follows: farm dressing percentage (FDP) = $100 \times (\text{HCW}/\text{FLW})$; slaughter dressing percentage (SDP) = $100 \times (\text{HCW}/\text{SLW})$; commercial dressing percentage (CDP) = $100 \times (\text{CCW}/\text{SLW})$; real dressing percentage (RDP) = $100 \times (\text{HCW}/\text{EBW})$; biological dressing percentage (BDP) = $100 \times (\text{CCW}/\text{EBW})$; and chilling losses (CH) = $(\text{HCW} - \text{CCW}) \times 100/\text{HCW}$.

Carcass linear measurements (in cm) were made based on standard protocols; these included internal carcass length (L), external carcass length (K), leg length (F), buttock width (G), buttock perimeter (BG), chest depth (Th), thorax width (Wr), and thoracic perimeter (PT). The following indices were then calculated from these measurements: (1) L/G ; (2) Th/G ; (3) Th/K ; (4) carcass compactness, i.e. CCW/L ; (5) leg compactness, i.e. $\text{leg weight}/F$; (6) chest roundness, i.e. Wr/Th ; (7) buttock/leg index, i.e. G/F ; and (8) HCW/L .

The shoulder, after thawing under chilling conditions (4°C) for 24 h, was weighed and separated into dissectible fat (subcutaneous and intermuscular), muscle, bone and the remainder (major blood vessels, ligaments, tendons and thick connective tissue sheets associated with some muscles) in a dissection room under a controlled environment with the temperature maintained below 15°C . Each component of tissue

composition was calculated as a percentage of shoulder weight. The muscle/bone and muscle/fat indices were then calculated, as were the dissection losses (calculated as the shoulder weight difference before dissection and the sum of the weights of all constituents after dissection, and expressed as a percentage of the weight before dissection), and freezing losses (calculated as the shoulder weight difference before and after freezing, and expressed as a percentage of the weight before freezing).

Supplementary Material S6

Near-infrared spectroscopy analyses

Dry matter, protein, fat and lactose contents were estimated by near-infrared spectroscopy (NIR) with a Foss NIRSystems 6500 SY-I monochromator (Silver Spring, Maryland, USA), from 400 to 2498 nm, every 2 nm (spectral bandpass $10\text{nm} \pm 1\text{nm}$), as described by Delgado-Pertíñez *et al.* (2013). Milk samples were scanned using a transfectance cam-lock ring cell (3.75 cm diameter) with 0.1 mm path length, fitted with a gold-plated backing disc (FOSS ref. IH-0355-1). All spectra were manipulated and processed using the WINISI III software package, version 1.50 (Infrasoft International, Port Matilda, PA, USA). Subsequently, chemometric models developed in previous studies for estimation of Payoya breed milk traits were applied to the NIR spectra. For calibration development, reference data were obtained with a Comby-Foss instrument (Milkoscan 255/605 type 25700/14100 and Fossomatic 250/360 type 25800/15700). Modified partial least squares (MPLS) calibrations were obtained using WINISI software. The calibrations were developed using a maximum of two passes for automatic outlier (T and H) elimination. T outliers are defined as samples with significant differences between their laboratory and predicted values, while H outliers are defined as samples whose spectra show excessive distance ($H > 3$) to the spectral centre of the calibration set. The performance of NIRS equations was evaluated by examining the statistical values obtained for calibration and external validation: coefficient of determination and

standard error of cross validation and external validation. Best calibrations were used to estimate milk trait values from spectral data of the samples studied in this work.

Supplementary Material S7

Total antioxidant capacity (TAC) of milk analysed by the ABTS assay

Total antioxidant capacity of whole milk samples was determined by the ABTS (2,2-azino-bis-3-ethylbenzothiazoline-6-sulfonic acid) method according to Pellegrini *et al.* (1999) and modified by Delgado-Pertíñez *et al.* (2013). In brief, to prepare the stock solution of the radical cation, an ABTS solution was oxidised in water by treatment with potassium persulfate (molar ratio = 1:0.35) for 12–16 h in the dark, and then diluted in buffer (0.1 mol/l acetate buffer, pH 5.0 or 0.1 mol/l potassium phosphate buffer, pH 5.0–7.4) prior to assay, giving an absorbance of 0.70 ± 0.02 at 730 nm. One millilitre of sample was added to 1 ml of reagent and incubated at 25°C for 10 min. Scavenging of the ABTS⁺ radical was monitored by the absorbance decrease at 730 nm using a UV/Vis spectrophotometer. The water-soluble vitamin E analogue Trolox was used as a standard, and TAC was expressed as mmol Trolox equivalents/kg of sample.

Supplementary Material S8

Total phenolic compounds in milk samples

Total phenolic compounds were quantified using the Folin-Ciocalteu method, according to the procedure described by Vázquez *et al.* (2015), with some modifications. In brief, once the samples were defrosted in a water bath at 35–40°C, they were homogenised by vortexing for 1 min. Eight millilitres of fluid goat milk was measured and transferred to a 25-ml volumetric flask; 10 ml of methanol-water (1:1, v/v) was added while vortexing for 1 min to mix with the sample; 500 µl of Carrez I solution was added and mixed while vortexing for 1 min; 500 µl of Carrez II solution was added and mixed while vortexing for 1 min; 5 ml of acetonitrile was added and mixed while vortexing for 1 min. The solution was made up to 25 ml with methanol-water (1:1, v/v) in a volumetric flask. The mixture

was then allowed to stand for 25 min until complete protein clot precipitation. The resulting solution was placed in a centrifuge tube and centrifuged at 2500 rpm and 4°C for 10 min. The phenolic compounds in the liquid extract were subsequently quantified using the Folin–Ciocalteu method, adapted to test tubes. A stock solution of gallic acid with a concentration of 0.5 mg/ml was prepared. With this solution, different dilutions were prepared for the calibration curve. A solution of 7% sodium carbonate was also prepared. At room temperature in dim light, 120 µl of extract obtained from milk was placed in each test tube and 500 µl of triple distilled water was added, followed by 130 µl of Folin-Ciocalteu reagent, 1250 µl of 7% sodium carbonate solution and 1000 µl of triple distilled water. A blank with all the components except for the extract was also prepared. Once the tube was filled, the contents were allowed to stand for 1.5 h. Subsequently, the contents were read using a UV/Vis spectrophotometer at an absorbance of 750 nm. Values were reported in mg of GA equivalents per litre.

Supplementary Table S1. Ration ingredients and proximate composition of the experimental diets used to feed goats at the end of pregnancy.

Items	Prepartum experimental diets ¹		
	Control	DOP40	DOP80
Ration ingredients, % DM basis			
Alfalfa hay	39.0	39.2	39.3
Concentrate			
Dehydrated orange pulp (pellets)	0	14.8	29.5
Grain oats	16.4	9.83	3.32
Grain barley	6.33	3.74	1.22
Grain corn	14.3	8.53	2.79
Soy flour, 44%	5.46	7.05	8.73
Sunflower pellets, 28%	9.53	9.57	9.86
Grain peas	7.63	6.00	4.19
Salt	0.26	0.26	0.26
Stabilised lard	0.26	0.17	0
Vitamins and minerals ²	0.87	0.87	0.87
Proximate composition and nutritive value, % DM			
DM, %	90.5	89.4	88.9
Crude protein	15.7	16.3	16.0
Neutral detergent fibre	24.1	21.6	22.8
Acid detergent fibre	11.4	14.0	17.2
Acid detergent lignin	2.84	3.85	2.18
Sugar and starch	28.2	22.4	16.8
Ether extract	3.60	1.47	1.86
Ash	5.12	6.22	8.10
Calcium	0.38	0.83	1.50
Phosphorus	0.40	0.38	0.43
Gross energy, kcal/g DM	4.48	4.39	4.34
Forage unit for lactation, UFL/kg	0.92	0.92	0.91
Protein digestible in the intestine (PDI)	10.0	10.3	10.7
TPC³, g GA equivalents/kg DM	6.05	9.79	13.5
TAC⁴, mmol Trolox[®] equivalents/kg DM	20.7	26.3	39.9

¹Control, diet based on commercial concentrates with alfalfa hay; DOP40, diet based on concentrate with 40% of cereals replaced by **dehydrated orange pulp (DOP)** plus alfalfa hay; DOP80, diet based on concentrate with 80% of cereals replaced by DOP plus alfalfa hay.

²Nutral cabras LD granulado, Cargill® Spain.

³TPC, Total phenolic compounds; GA, gallic acid.

⁴TAC, Total antioxidant capacity by DPPH (2,2-diphenyl-1-picrylhydrazyl) assay.

Supplementary Table S2. Farm live weight, slaughter live weight, carcass weight, fasting and chilling losses, dressing percentages, carcass linear measurements and indices for suckling kids according to use of the experimental diets in feeding mother goats.

Variable	Diet ¹			Overall means	SEM ²
	Control ^a	DOP40	DOP80		
No. of kids	10	10	10		
Farm live weight (FLW), Kg	9.51	9.55	9.13	9.40	0.17
Slaughter live weight (SLW), Kg	8.99	9.03	8.65	8.89	0.16
Hot carcass weight (HCW), Kg	4.95	5.03	4.87	4.95	0.10
Cold carcass weight (CCW), Kg	4.74	4.82	4.65	4.74	0.10
Fasting time, h	13.5	13.6	13.5	13.5	0.02
Fasting losses ³ , %	5.56	5.42	5.30	5.43	0.20
Chilling losses, %	4.39	4.17	4.53	4.37	0.22
Farm dressing percentage ³ , %	51.9	52.7	53.2	52.6	0.35
Slaughter dressing percentage ³ , %	55.00	55.7	56.2	55.6	0.35
Commercial dressing percentage ³ , %	52.6	53.4	53.7	53.2	0.37
Internal carcass length (L), cm	42.2	42.5	42.7	42.5	0.31
External carcass length (K), cm	40.4	40.9	41.4	40.9	0.29
Leg length (F), cm	23.6	24.0	24.0	23.9	0.13
Buttock width (G), cm	9.30	9.22	9.05	9.19	0.96
Buttock perimeter (BG), cm	28.1	28.4	27.7	28.1	0.37
Chest depth (Th), cm	16.5	15.5	16.6	16.2	0.27
Thorax width (Wr), cm	9.96	11.1	9.65	10.3	0.31
Thoracic perimeter (PT), cm	41.2	41.6	41.1	41.3	0.33
Th/K	0.40	0.39	0.39	0.40	0.01
Th/G	1.76	1.74	1.80	1.77	0.02
L/G	4.57	4.63	4.73	4.65	0.06
G/F	0.39	0.38	0.38	0.38	0.04
Chest roundness index (Wr/Th)	0.62	0.75	0.58	0.65	0.04
Carcass compactness index (CCW/L)	117.4	118.1	113.9	116.4	2.39
HCW/L index	112.1	113.1	108.8	111.3	2.34
Leg compactness index (LW/F)	34.3	34.5	33.0	33.9	0.69

¹Control, diet based on commercial concentrates plus alfalfa hay; DOP40, diet based on concentrate with 40% of cereals replaced by dehydrated orange pulp (DOP) plus alfalfa hay; DOP80, diet based on concentrate with 80% of cereals replaced by DOP plus alfalfa hay.

²No significant differences were seen between different diets in terms of any variable examined ($P>0.05$).

³Fasting losses (FLW-SLWx100); Farm dressing percentage (HCW/FLWx100); slaughter dressing percentage (HCW/SLWx100); commercial dressing percentage (CCW/SLWx100).

Supplementary Table S3. Contribution of prime cuts and tissue composition of the shoulder, in suckling kids according to use the experimental diets in feeding mother goats.

Prime cuts (% on left half-carcass) ³	Diet ¹			Overall means	SEM ²
	Control	DOP40	DOP80		
No. of kids	10	10	10		
Left half-carcass, kg	2.47	2.51	2.42	2.47	0.05
Shoulder (First category)	20.0	20.3	20.5	20.3	0.26
Long leg	32.7	33.2	32.8	32.9	0.26
Neck	9.72	9.68	9.46	9.62	0.21
Ribs	21.7	20.6	20.4	20.9	0.39
Flank	10.3	9.24	9.13	9.56	0.47
Extra category	54.4	53.7	53.1	53.7	0.42
Second category	19.8	19.2	18.9	19.3	0.28
Tissue composition of the shoulder, % on shoulder weight					
Muscle	60.6	61.7	60.8	61.0	0.32
Bone	25.2	24.9	24.9	25.0	0.29
Intermuscular fat	5.45	6.07	6.07	5.86	0.24
Subcutaneous fat	2.21	2.26	2.60	2.36	0.19
Other tissues	6.46	5.02	5.67	5.74	0.20
Muscle/Bone	2.41	2.49	2.45	2.45	0.03
Muscle/Fat	8.15	7.81	7.19	7.71	0.29

¹Control, diet based on commercial concentrates plus alfalfa hay; DOP40, diet based on concentrate with 40% of cereals replaced by dehydrated orange pulp (DOP) plus alfalfa hay; DOP80, diet based on concentrate with 80% of cereals replaced by DOP plus alfalfa hay.

²No significant differences were seen between different diets in terms of any variable examined ($P>0.05$).

³Left half-carcass (with testicles, kidneys and tail), Extra category (long leg and ribs) and Second category (Neck and flank).

Supplementary Table S4. Effect of experimental diets¹ on the milk FA profile during the early (0-55 days) lactation of goats.

FA ³ , mg/g DM	Diet ¹			Overall means	SEM ²
	Control	DOP40	DOP80		
C4:0	8.54	7.49	7.48	7.80	0.37
C6:0	11.2	10.1	10.0	10.4	0.50
C8:0	9.67	8.62	8.58	8.92	0.43
C10:0	21.7	20.7	20.4	20.9	0.88
C11:0	0.16	0.14	0.14	0.15	0.01
C12:0	12.7	11.6	11.5	11.9	0.58
C13:0	0.14	0.15	0.13	0.14	0.01
C14:0	16.1	15.6	14.4	15.4	0.68
C14:1	0.43	0.39	0.39	0.40	0.02
C15:0	1.11	1.23	1.02	1.12	0.05
C15:1	0.07	0.06	0.06	0.06	0.00
C16:0	55.2	55.2	49.5	53.4	2.42
C16:1	2.15	2.38	1.97	2.18	0.10
C17:0	0.76	0.68	0.67	0.70	0.03
C17:1	0.21	0.19	0.19	0.19	0.01
C18:0	24.6	26.1	23.6	24.8	1.05
C18:1 n-9 <i>trans</i>	2.21	1.99	1.98	2.06	0.10
C18:1 n-11 <i>trans</i> (VA)	1.59	1.41	1.38	1.46	0.07
C18:1 n-9 <i>cis</i>	44.4	43.8	40.6	43.0	1.75
C18:2 n-6 <i>trans</i>	0.34	0.30	0.30	0.31	0.01
C18:2 n-6 <i>cis</i>	7.81	6.96	6.93	7.21	0.35
γ -C18:3 n-6	0.19	0.21	0.17	0.19	0.01
α -C18:3 n-3	0.50	0.44	0.44	0.46	0.02
CLA <i>cis</i> -9, <i>trans</i> -11 (RA)	1.47	1.56	1.36	1.46	0.07
CLA <i>trans</i> -10, <i>cis</i> -12	0.03	0.03	0.03	0.03	0.00
C20:0	0.50	0.46	0.44	0.46	0.02
C20:1 n-9	0.10	0.09	0.09	0.09	0.00
C20:2	0.14	0.12	0.12	0.13	0.01
C20:3 n-3	0.05	0.06	0.05	0.05	0.00
C20:3 n-6	0.07	0.08	0.07	0.07	0.00
C20:4 n-6 (ARA)	0.46	0.41	0.41	0.42	0.02
C20:5 n-3 (EPA)	0.06	0.06	0.06	0.06	0.00
C21:0	0.04	0.04	0.04	0.04	0.00
C22:0	0.27	0.24	0.24	0.25	0.01
C22:1 n-9	0.05	0.04	0.04	0.05	0.00
C22:2	0.03	0.03	0.03	0.03	0.00
C22:5 n-3 (DPA)	0.10	0.11	0.09	0.10	0.00
C22:6 n-3 (DHA)	0.04	0.04	0.03	0.04	0.00
C23:0	0.05	0.05	0.05	0.05	0.00
C24:0	0.05	0.04	0.04	0.04	0.00
C24:1	0.03	0.03	0.03	0.03	0.00
SFA	163	158	148	156	6.90
MUFA	51.3	50.4	46.7	49.5	2.04
PUFA	11.3	10.4	10.1	10.6	0.49
n-3	0.75	0.71	0.67	0.71	0.03
n-6	8.86	7.96	7.87	8.21	0.39
n-6:n-3	11.8	11.2	11.6	11.5	0.10
CLA total	1.50	1.59	1.39	1.50	0.07

¹Control, diet based on commercial concentrates plus alfalfa hay; DOP40, diet based on concentrate with 40% of cereals replaced by dehydrated orange pulp (DOP) plus alfalfa hay; DOP80, diet based on concentrate with 80% of cereals replaced by DOP plus alfalfa hay.

²No significant differences were seen between different diets and prolificacy in terms of any variable examined ($P>0.05$).

³ $n=12$ in each group; VA, vaccenic acid; RA, rumenic acid; ARA, arachidonic acid; EPA, eicosapentaenoic acid; DPA, docosapentaenoic acid; DHA, docosahexaenoic acid; SFA, saturated FAs; MUFA, monounsaturated FAs; PUFA, polyunsaturated FAs; UFA, unsaturated FAs; CLA, conjugated linoleic acid.