The vitamin A and E content in meat, fat and giblets of lambs depending on the breed and feeding

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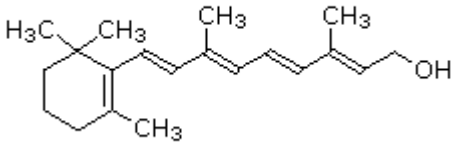
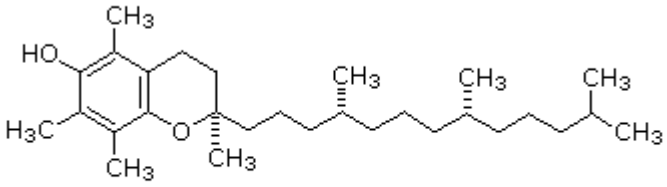
Aim

- To investigate vitamin A and E content in meat, fat and giblets of lamb depending on feeding system and breed



vitamin A

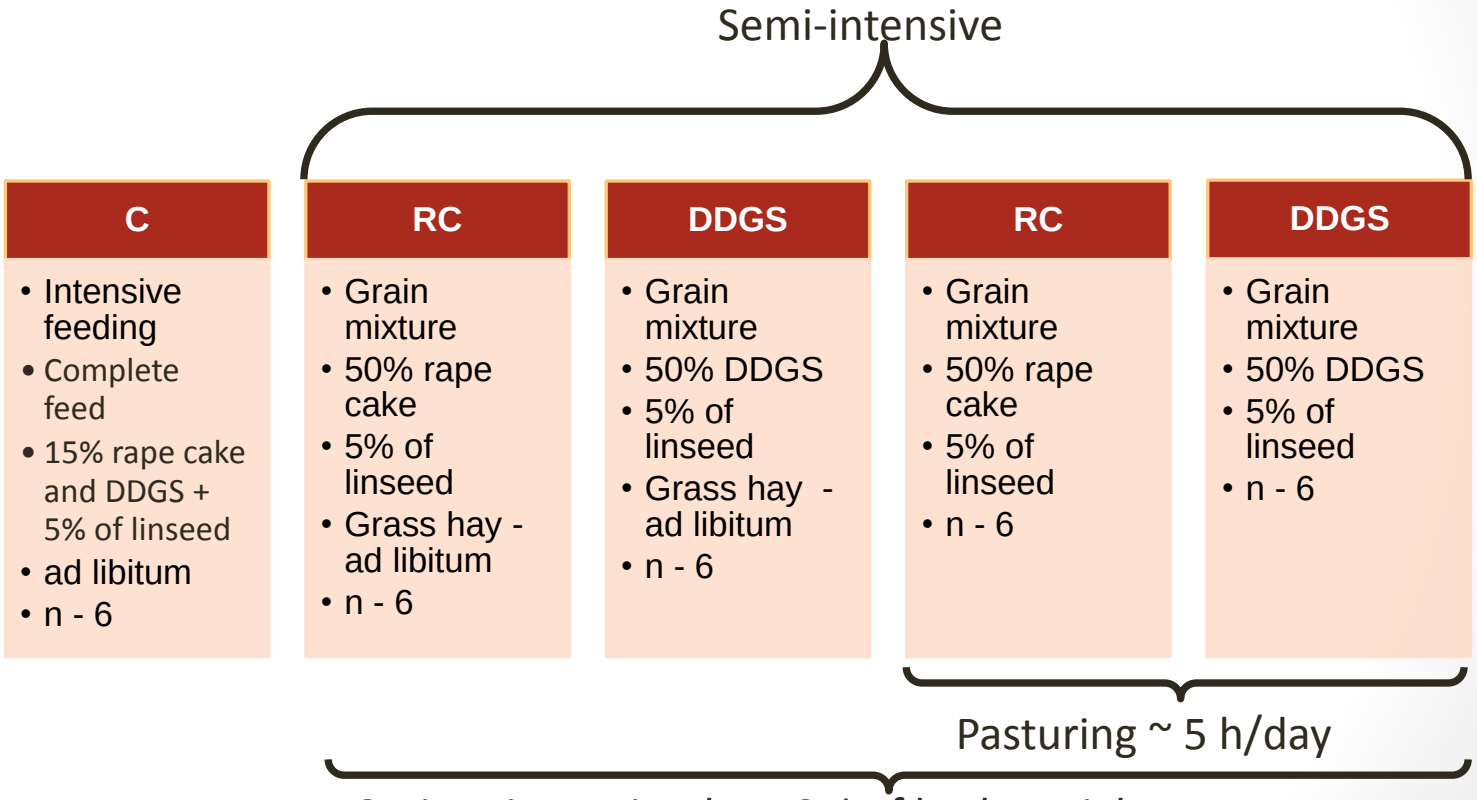


vitamin E

Materials and methods

- 30 ram – lambs → Kołuda Sheep (n-15)
  Ile de france x Kołuda Sheep (n-15)

Materials and methods



Materials and methods

- Rams were fattened to the body weight: 32-37 kgs
- Samples colected (*longissimus lumborum* muscle, cover fat and giblets: liver, lung, heart and kidney) and stored at -20 °C temperature
- Tissue fat extraction
- Vitamins were determined using reversed-phase high-performance liquid chromatography method (RP-HPLC) –
  Agilent 1100, column ZORBAX Eclipse XDB - C8, 4,5 mm x 150 mm)
- Statistical calculation (Statistica software v.6.0)

Sheep giblets

Photos: B. Borys

Results

The vitamin A and E content in meat, fat and giblets of lambs depending on the breed [mg/100g]

Genotype	Meat		Cover fat		Liver		Lung		Heart		Kidney	
	x	v%	x	v%	x	v%	x	v%	x	v%	x	v%
Vitamin A												
KS (n - 15)	0,86	40,0	0,74	57,2	**4,63**	25,5	0,005	53,9	0,11	28,6	**2,24**	35,4
IfxKS (n - 15)	**0,97**	48,8	**0,87**	48,8	4,13	22,7	**0,009**	90,5	**0,20**	71,3	2,07	25,4
Vitamin E												
KS (n - 15)	**2,20**	57,4	**1,85**	18,4	**8,35**	58,3	0,95	75,0	0,39	53,4	**4,18**	139,4
IfxKS (n - 15)	1,53	55,5	1,68	34,6	7,97	31,4	**1,08**	74,6	**0,43**	61,7	2,76	118,3

KS – Kołuda Sheep
IfxKS – crossbreed Ile de France x Kołuda Sheep

The vitamin A and E content in meat, fat and giblets of lambs depending on fattening system [mg/100g]

Fattening system	Meat		Cover fat		Liver		Lung		Heart		Kidney	
	x	v%	x	v%	x	v%	x	v%	x	v%	x	v%
Vitamin A												
IN (n - 6)	0,90	36,9	**0,92**	30,3	**4,49**	18,9	**0,008**	138,0	0,12	27,5	1,99	37,3
SIN (n - 24)	**0,93**	48,2	0,79	54,0	4,29	25,8	0,007	70,8	**0,17**	73,1	**2,18**	28,6
Vitamin E												
IN (n - 6)	1,07	55,9	**1,76**	36,6	**9,68**	60,5	**0,37a**	33,7	0,42	60,9	**9,30A**	52,8
SIN (n - 24)	**1,98**	55,1	1,75	27,1	7,74	36,0	0,20a	63,9	0,42	59,0	1,8 A	152,6

AA - P≤0,01; aa - P≤0,05
IN – intesive fattening system
SIN – semi-intensive fattening system

The vitamin A and E content in meat, fat and giblets of lambs depending on roughage [mg/100g]

Roughage	Meat		Cover fat		Liver		Lung		Heart		Kidney	
	x	v%	x	v%	x	v%	x	v%	x	v%	x	v%
Vitamin A												
Grass hay (n - 12)	0,64A	42,7	**0,91**	53,3	**5,11A**	14,4	0,004A	51,4	0,09A	42,4	**2,53A**	23,8
Pasture (n - 12)	**1,23A**	32,6	0,66	58,3	3,48A	21,9	**0,010A**	56,2	0,26A	52,1	1,83A	23,3
Vitamin E												
Grass hay (n - 12)	**2,34**	45,6	1,71	24,0	7,64	31,0	0,70A	100,8	0,36	64,3	**3,50 A**	91,6
Pasture (n - 12)	1,61	63,5	**1,78**	30,5	**7,84**	41,5	**1,69A**	25,4	**0,47**	54,5	0,17 A	86,1

AA - P≤0,01; aa - P≤0,05

The vitamin A and E content in meat, fat and giblets of lambs depending on use of oil by-products [mg/100g]

Oil by-products	Meat		Cover fat		Liver		Lung		Heart		Kidney	
	x	v%	x	v%	x	v%	x	v%	x	v%	x	v%
Vitamin A												
RC (n - 12)	0,91	58,4	**0,93**	49,4	**4,30**	29,2	0,006	55,7	0,13	50,1	2,05	27,7
DDGS (n - 12)	**0,96**	39,1	0,64	63,4	4,29	23,3	**0,008**	77,9	**0,22**	72,5	**2,30**	29,2
Vitamin E												
RC (n - 12)	1,85	63,6	**1,84**	29,9	6,69	38,3	0,84a	101,9	**0,50**	50,3	**3,25A**	104,6
DDGS (n - 12)	**2,10**	49,0	1,65	22,9	**8,78**	30,7	**1,56a**	29,5	0,33	64,4	0,41A	150,2

AA - P≤0,01; aa - P≤0,05
RC- Rape cake
DDGS - Dried Distillers Grains with Solubes

Statements:

- The tested tissues and organs differed in vitamins content.
- Genotype did not affected on content of vitamin A and E in tested organs.
- The highest level of vitamin A as well as vitamin E were observed in liver.
- The lowest level of both vitamins were found in lung
- The applied methods of fattening influenced on level of vitamin E in kidney
- Content of vitamin A comparing IN and SIN were leveled.
- Pasturing increased level of vitamin A in meat, lung, heart and vitamin E in lung.
- Use of grass hay increased level of vitamin A in and vitamin E in kidney
- Addition of rape cake and DDGS affected only on level of vitamin E in kidney and in lung

Thank you for your atention