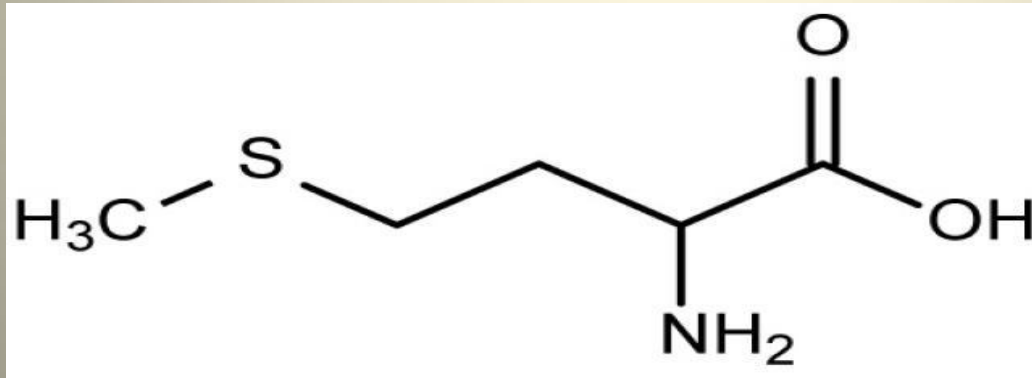


Zinc-methionine bioplex administration to pregnant and lactating sheep and selected wool parameters

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Why methionine and hair?

- Next to cystine one of the main components of keratin, responsible for the proper construction of the hair (Reis.1992; Qi.1994)



Why zinc and hair?

- It contributes in sulfur amino acids incorporation into the hair (Reis.1989)
- Zinc deficiency inhibits wool growth (Reis.1989)

The problem of deterioration quality of wool during pregnancy and lactation

- Lowest thickness than the average (Patkowska- Sokoła 1991)
- Lower growth rate relative to average annual growth (Patkowska- Sokoła 1991)



The aim of the study was to examine the effect of chelate (Zn + methionine)* supplementation to Merino ewes, during pregnancy and early lactation, on wool quality traits

* Zinpro100 preparation (Zincpro Corporation. USA)

Animals

22 pregnant and lactating sheep of Polish Merino

Control group - 11 ewes



Experimental group - 11 ewes

0.4 g Zinpro100/ ewe/ day

Experiment: 4 months- 3.5 month of pregnancy and 2 weeks of lactation period

Basic sheep nutrition

Diet	Pregnant ewe	Lactating ewe
Maize silage	34.4%	35.8%
Meadow hay	27.4%	25.9%
Rye straw	27.4%	21.4%
Barley grain	13.8%	17.4%

***Content per kilogram of Dry Matter**

Zinc (mg/kg d.m.)

Group	Pregnant ewe	Lactating ewe
	content	
Control	49.36	62.12
Experimental	89.36	102.12

Minimum requirement: 20- 33 mg/kg DM

Maximum requirement: 750 mg/kg DM

(NRC 1985)

Samples and measurements

- Wool samples were cut at the left side before and after experiment from every ewe to evaluate:
 - ✓ **Wool length (cm)**
 - ✓ **Wool thickness (μm)**
 - ✓ **Zinc content of wool (mg/kg DM)**- atomic absorption spectrophotometer AAS-3
 - ✓ **The composition of element ions on the surface of wool** – scanning microscope
 - ✓ **Histological structure of wool** – scanning microscope

Results



The average length and thickness of wool

Parameter		Group	
		Control	Experimental
Length (cm/ 4 months)	mean	2.58*	3.31*
	sd	0.5	0.88
Thickness (μm)	mean	22.56*	24.39*
	sd	0.35	0.8

* $P \leq 0.05$

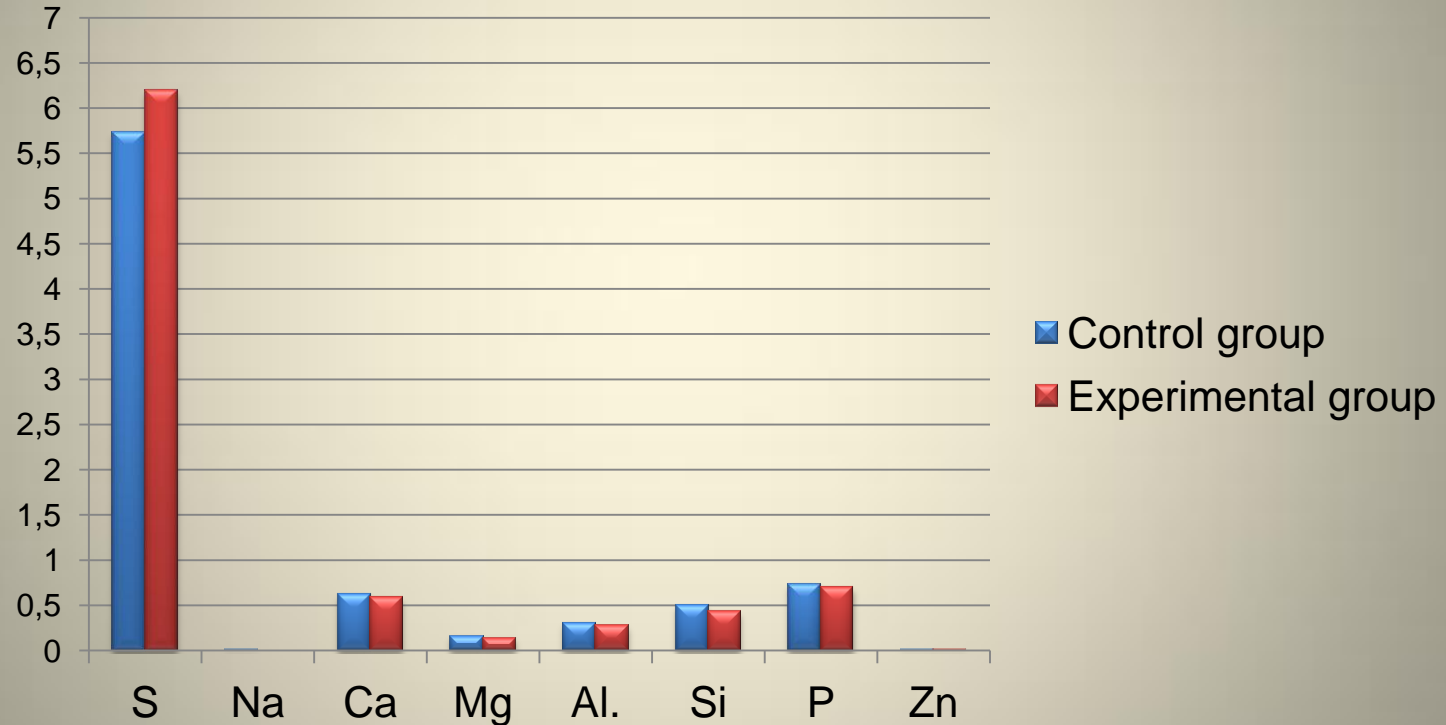
The average zinc content in the dry matter of the entire wool fibres

Group		Zn (mg/kg)
Control	mean	85.56*
	sd	9.13
Experimental	mean	98.39*
	sd	11.52

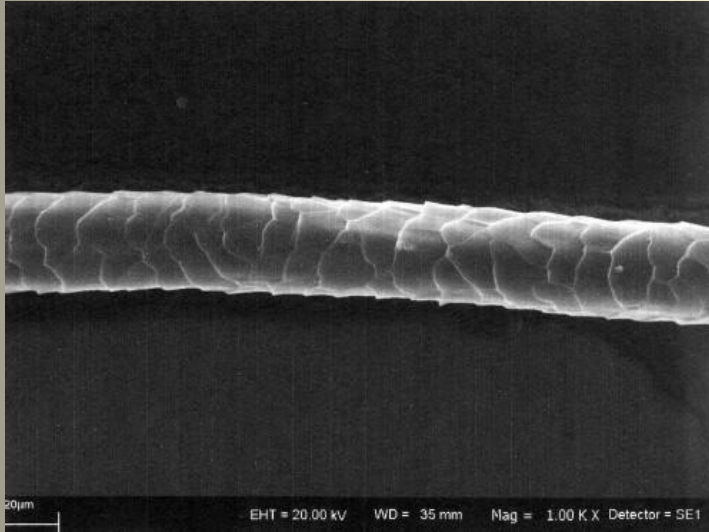
*P≤0.01

The zinc content of the wool of normal sheep range from 77 to 120 mg/kg

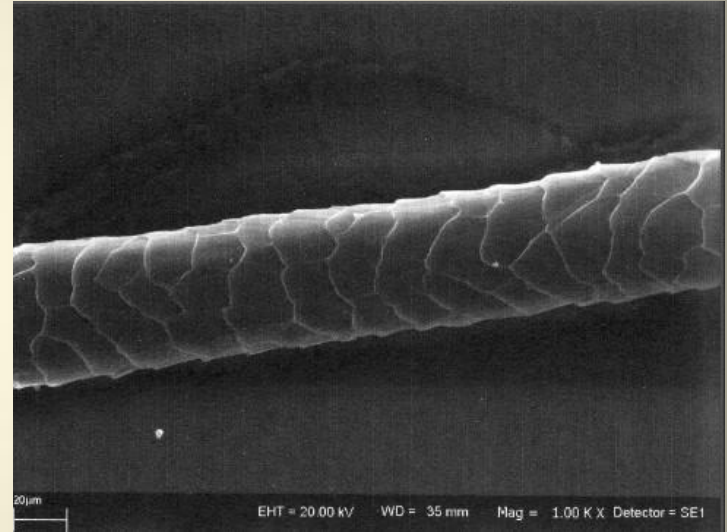
The content of some element ions on the wool surface



Histological structure of wool



Control group



Experimental group

Conclusions

In experimental group:

- Wool length was ca. 30% higher
- Thickness was ca. 8% higher
- Zinc content in DM was about 15% higher

Zinc-methionine bioplex administration is recommended during pregnancy and lactation in order to reduce depression in wool growth

Thank You for Your attention!

