Cytokine expression in the blood of goats infected with small ruminant lentivirus

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IMMUNITY

One of the most important factors of the proper functioning of organism
IMMUNITY

innate
- first line of the defense against pathogens
- immediate reaction
- inaccurate reaction
- no immune memory

adaptive
- long term acting
- specific and effective reaction
CELLS CONNECTED WITH THE INNATE IMMUNITY

Leukocytes:
- Monocytes
- Macrophages
- Neutrophils

Epithelial cells
ANTIMICROBIAL PROTEINS CONNECTED WITH THE INNATE IMMUNITY

Leukocytes:
- Monocytes
- Macrophages
- Neutrophils

Epithelial cells

Interferons

Interleukines
Small Ruminant Lentiviruses:
Caprine arthritis and encephalitis virus
Maedi-Visna virus
Ovine Progressive Pneumonia virus

Retrovirus family – Retroviridae
Lentivirus subfamily – Lentivirinae

The disease
CELLS CONNECTED WITH THE INNATE IMMUNITY

Leukocytes:
- Monocytes
- Macrophages
- Neutrophils

Epithelial cells

SRLV infection
Expression of Cytokine mRNA in Lentivirus-Induced Arthritis

Viral load, organ distribution, histopathological lesions, and cytokine mRNA expression in goats infected with a molecular clone of the caprine arthritis encephalitis virus

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Objective

The aim of the project was the determination of mRNA and protein expression of pro-inflammatory cytokines in the blood collected from goats infected with small ruminant lentivirus.
Hypothesis

There are differences in gene and protein expression of pro-inflammatory cytokines in the blood, of uninfected and SRLV infected goats.
**Expected results**

Determine which pro-inflammatory cytokines are involved in the immune response against SRLV.

Determine deregulated expression of pro-inflammatory cytokines in the blood leukocytes.
Animals
Dairy goats
Polish White Improved and Polish Fawn Improved
Healthy and SRLV infected without mastitis and in generally good condition

2 groups – 26 individuals
experimental – animals infected with SRLV
control – healthy animals, free of SRLV

Analogous groups – breed and age
MATERIAL AND METHODS

RNA
- cDNA
  - Real Time PCR

SERUM
- ELISA
## TARGET CYTOKINES

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<thead>
<tr>
<th>INTERLEUKINES</th>
<th>INTERFERONS</th>
<th>TNF SUPERFAMILY MOLECULES</th>
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<tr>
<td><em>IL-1α</em></td>
<td><em>INF-α</em></td>
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The gene expression

The protein expression

RESULTS
CONCLUSIONS

1. Decreased gene and protein expression of IL-1α, IL-1β and IL-6 suggests impaired function of the immune system of SRLV infected goats, preventing them the fight against disease.

2. mRNA levels cannot be used as surrogates for corresponding protein levels without verification.

3. Differences between gene and protein expression of TNF-α and INF-γ may suggest several post-transcriptional, post-translational modifications, or protein degradation not connected with the effect of the virus.

4. It is necessary to verify the results using another method (Western blott) or another biological material (plasma).
PLANS FOR THE FUTURE

1. Verification of obtained results

2. Epigenetic study of the effect of SRLV on the regulation of gene and protein expression
Thank You for the attention