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Proteins candidates for complementary diagnosis of goats naturally infected by lentivirus

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The caprine arthritis encephalitis (CAE) is a disease caused by Lentivirus genus, Orthoretrovirinae subfamily, and Retroviridae family belonging to the same human immunodeficiency virus (HIV) family. This viral disease is widespread in the world, affecting especially goat dairy, being easily transmitted by contact among animals secretion, milk ingestion and also through contaminated ejaculate. Has no cure and is difficult to control, since the tests in use are not accurate due to virus latency, providing false negative results. The present study aimed to identify the major seminal plasma protein profile of goats chronically infected by CAE. Two groups containing five males each, aging 4 to 5 years were used. The first group was composed by naturally and chronically CAE-infected animals and the control by seronegative, both confirmed by two blood tests of Western blotting (WB) and by polymerase chain reaction (PCR). The semen was collected through artificial vagina and after that, two-dimensional electrophoresis and MALDI-TOF MS were used. The proteins of high expression identified only in seropositive animals play an important role in the viral infection, such as the protease arylsulfatase A, whose function probably is related to metabolism control of sulfatides, involved to virus control. The other ones were bifunctional ATP-dependent dihydroxyacetone kinase/FAD-AMP lyase, cathepsin F isoform X1, disintegrin and metalloproteinase domain-containing protein 2-like isoform X1, clusterin, carbonic anhydrase 2, electron transfer flavoprotein subunit beta, and epididymal secretory glutathione peroxidase. These results show that seminal plasma proteins are involved on reproductive process protection in chronically infected goats by CAE. As the arylsulfatase A enzyme participates in the physiological events of fertilization in bulls and sheep, and it is absent in seronegative goat to CAEV, probably the main function of this enzyme in goats can be related to metabolism control of sulfatides, involved to virus control.

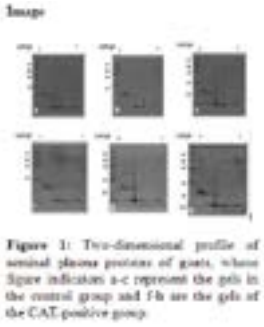

Figure 1: Two-dimensional profile of seminal plasma proteins of goats, whose figure indicates a-c represent the gels in the control group and f-h are the gels of the CAE positive group.

Recent Publications

1. Bezerra Junior R G, Eloy A M X, Furtado J R, Pinheiro R R, Andrioli A P, Moreno F B M, Lobo M D P, Monteiro-Moreira A C O Moreira, R A, Pinto T M F and Teixeira M F S (2017) A panel of protein candidates for comprehensive study of caprine arthritis encephalitis (CAE) infection. Tropical Animal Health and Production 50(1):43-48.
2. Bezerra Junior R, Eloy A M X, Pereira E P, Furtado J R, Souza k C, Lima A R, Pinheiro R R, Andrioli A and Teixeira M F S (2015) Avaliação das metaloproteinases de matriz no sangue de reprodutores caprinos naturalmente infectados com Artrite Encefalite Caprina na Região Semiárida do Brasil. Acta Scientiae Veterinariae 43:1-7.
3. Eloy A M X, Galiza Y S, Pinheiro R R and Andrioli A P (2017) Activation of MMPs during experimental infection of goats by CAEV. In: 5th International Congress on Analytical Proteomics, Caparica. ICAP 2017 Proceedings Book. Lisboa: Proteomass, 1:43-317.

Biography

Angela Maria Xavier Eloy, Graduate in Veterinary Medicine, PhD from the University of Leeds, England. She is one of the first researchers to study the relationship between caprine arthritis encephalitis (CAE), a viral disease caused by lentivirus, and proteomics, involving the identification of proteins and the behavior of metalloproteinases (MMPs). She is in search of markers aiming to complement the diagnosis of CAE, since there is still no safe test to control this virus disease.

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