

2. Summary

The study of inguinal hernias in pigs focused on the analysis of levels collagens type I, III, and IV, and matrix metalloproteinases 2 and 9 (MMP-2 and MMP-9) in blood serum, to determine their association with the occurrence of hernias. Inguinal hernias are a common surgical problem, and their pathogenesis is multifactorial. Altered collagen metabolism and matrix metalloproteinases (enzymes responsible for degrading the extracellular matrix) may play a significant role in the development of this defect.

The study compared two groups of pigs: with inguinal hernias and a control group without hernias. Blood samples were analyzed for type I, III, and IV collagens, as well as MMP-2 and MMP-9, using ELISA tests. The results showed significant differences in the levels of collagens and metalloproteinases between the groups. Type I collagen, the primary structural component of tissues, was significantly elevated in pigs with hernias (median 40,86 ng/ml compared to 21,66 ng/ml in the control group). Type III collagen also exhibited elevated levels in the study group (2,83 ng/ml) compared to the control group (2,05 ng/ml). Type IV collagen showed no significant differences between the two groups. MMP-2, the enzyme responsible for collagen degradation, was significantly higher in pigs with hernias, suggesting its critical role in hernia development. MMP-9 did not show significant differences between the groups, indicating a lesser or no role for this enzyme in the mechanism of inguinal hernias in pigs.

The conclusions suggest that collagen I, III, and MMP-2 may be potential biomarkers for inguinal hernia, and changes in the levels of these proteins may contribute to weakening of connective tissue structure, leading to hernias. Further studies are needed to better understand the complex interactions between collagens, MMPs, and other components of the extracellular matrix in the context of inguinal hernias. Understanding these mechanisms could lead to the development of more precise diagnostic methods and more effective hernia treatments, which would improve care for patients suffering from hernias and impact good breeding practices.

Keywords: inguinal hernia, swine, collagen, metalloproteinases, ELISA