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Biochemical Approaches in The Treatment of Wildlife

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When it comes to veterinary research, the topic of biochemistry is crucial. For both wild and captive animals, blood hematological and biochemical measures are required to diagnose disease and assess health. Serum biochemistry is a technique for the clinical evaluation of livestock and wild animals, and the use of hematological parameters is crucial in determining an animal's status.

Hematological and biochemical characteristics differ depending on the species being evaluated. In the management of wildlife, the use of animal blood as a pathologic indicator for disease is crucial. This is due to the fact that herbivores are thought to be crucial to the ecology and benefit humans economically.

Clinical Biochemistry for the Treatment of Wildlife

Clinical biochemistry is described as the examination of blood plasma (or serum) for a variety of body fluids, such as substrates, enzymes, and hormones, in addition to those that are used to monitor and identify diseases in wildlife. Additionally, tests involve the examination of animal bodily fluids such as urine, cerebrospinal fluid, and ascitic fluids. The most often requested analytes are affected by a number of circumstances, hence specific tests to diagnose one clinical condition are utilized.

According to this theory, a carefully selected set of tests can be performed to provide information about a range of conditions. For example, in the treatment of wildlife, biochemistry tests are also used in conjunction with full hematology, as the evaluation of both of these results is crucial for the identification of recognizable disease patterns.



The Basic Test Panel for Wildlife Treatment

An elementary panel of tests can be performed in a number of veterinary laboratories. Each of these panels shows the very minimum of research needed in the majority of circumstances. A standard panel for the examination of small animals should contain measurements of total protein, globulin, albumin, creatinine, urea, and alkaline phosphatase. Bilirubin can also be tested in addition. For the analysis of other animals, this panel might be changed. For farm animals, a liver enzyme test for glutamate dehydrogenase (GDH) and/or gamma-glutamyl transferase (GGT) is thought to be more diagnostically beneficial. When examining athletic animals, muscle enzymes (CK and AST) are thought to be a better choice.

Clinical Biochemistry in Animals

Animal biochemistry is the study of several chemical processes occurring within an animal's body. Various facets of veterinary science and animal husbandry requires a thorough comprehension of this. This involves a deeper comprehension of animal metabolism and how it functions in both health and disease. The basis for understanding how the chemical architecture of biological molecules is related to their function is biochemistry, which is relevant to metabolism and function. Understanding and analyzing chemical factors are crucial in the case of animal husbandry. The cultivation and development of domestic animals utilizes biochemical techniques. Veterinarians utilize a variety of biochemical instruments to identify diseases in animals. For instance, modern technologies like dynamic tensiometry (DT) are employed in the farming of cattle.

In the case of cattle farming, hematological indicators such as total protein and their fractions, enzymes, low molecular metabolites such as glucose, lipids, and bilirubin, as well as cations and anions are used for general screening and complete diagnosis of animal health periods. For example, pregnancy, viral and chronic diseases, and cancer are studied and analyzed using investigations of cell-free nucleic acids that circulate in the blood. Using common molecular biology methods like DNA amplification and next-generation sequencing, this cell-free DNA can be found. Additionally, contemporary methods like digital PCR provide an improved quantification of copy number changes, which is particularly crucial in the prenatal diagnosis of chromosome abnormalities.

Biochemistry's Role in Animal Reproduction

The ability to reproduce is regarded as a desirable trait in livestock animals. Fertility is influenced by a number of variables, such as genetics, health, and environmental factors including management practices.

By focusing on a few crucial stages in fertility, biochemistry has been used to influence



fertility in animals like cattle. The development of the gametes, ovulation, fertilization, implantation, and gestation are some of these. The Food and Agriculture business has been able to produce meat and milk effectively to fulfil the demands of an expanding human population thanks to the pharmacological regulation of fertility.

Biochemistry for Improved Animals

More and more, the application of genome or gene-editing technologies is being thought about. With this method, individual somatic cell modifications can be made to a bovine genomic locus, for example, to knock out or silence particular genes using a process known as homologous recombination. As a proof of concept, this gene-targeting technique has mostly been tested in mouse embryonic stem cells.

More effective and simple genomic engineering in animals has been made possible by the subsequent development of designer nucleases like zinc-finger nucleases, transcription activator-like effector nucleases (TALENs), and clustered regularly interspaced short palindromic repeats (CRISPR/Cas9). This results in transgenic animals, which may yield meat with a superior nutritional profile, milk with medicinally helpful chemicals, or animals with increased disease resistance.

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