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Commentary

The Design and Nomenclature of the Lymphoid Tissues in Treeshrews

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DESCRIPTION

As a small laboratory animal, the treeshrew exhibits a genetic affinity for primates that is stronger than that of rats and mice. Many treeshrew models of human diseases have been developed as a result, particularly those for researching immune systems and viral infections including the human hepatitis B, hepatitis C, influenza, herpes simplex, EBV, and SARS-CoV-2. Disease onset and progression are highly correlated with the treeshrew's immunological processes. To fully understand the immune response to diseases and then successfully implement preventive and therapy, it is important to thoroughly examine the roles of immune-related genes and proteins, immune cells, and histopathological changes of immune tissues and organs. Previous research revealed that treeshrews immune systems are largely identical to humans [1].

The Major Histocompatibility Complex (MHC), crucial immune response molecules, and genes encoding antibodies, for instance, are highly homologous to those of humans, as are the differences in the number of peripheral blood cells between treeshrews and mice and rats, which are also closer to those of humans. These investigations offer molecular and biological insights into the investigation of treeshrews' immune systems [2]. However, no anatomical research on the treeshrew immune system's organs has been published as of yet. The immune organs are crucial components of the immune system since they serve as the sites where T and B-lymphocytes settle and multiply as well as immune cells develop and mature. It serves as the primary location for the immunological response [3].

The primary function of lymph nodes, which are crucial immunological organs, is to gather and filter lymphatic fluid from all over the body. Given that the tumefaction of local lymph nodes and other changes are frequently brought on by the invasion of harmful bacteria or inflammation, an examination of lymph nodes can help in understanding the immune response of the organism to a certain extent. This paper examined the location of immune organs such as lymph nodes, spleen, and thymus from the standpoint of anatomy and histomorphology to enhance the immunological study of treeshrews.

Ten healthy adult treeshrews were used in the experiments; they were acquired from the Kunming Institute of Zoology, Chinese Academy of Sciences. Treeshrews were kept separately in hanging metal cages before the tests. Housing conditions were as follows: the temperature was 23–25°C, the relative humidity was 40–60%, the photoperiod/dark duration was 12 h, and environmental noise did not exceed 60 dB.

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A 1-ml syringe with a 30-G needle was used to inject the tracer into the skin at the end of each toe on four limbs. The tracer was made with 3% hydrogen peroxide and methylene blue dye. Under a dissecting microscope, the skin on the dorsal side of the anterior and posterior palms was then slowly peeled off to reveal the dyed lymphatic veins. To continue injecting the tracer and locate the lymph nodes associated with the vessels, a microinjection glass capillary needle with an outside diameter of 1 mm was gently inserted into the lymphatic vessels. The location of the lymph nodes was captured on camera and confirmed by a second treeshrew without the injection of a tracer in the same location [5].

CONCLUSION

Numerous studies on the treeshrews have been published as a result of the suggestion to use them as experimental animals. While most basic research has not yet been resolved, the majority

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of studies involve applied research, such as the creation of models for the treeshrew illness. For instance, pure genetic lines of treeshrews are continuously being developed. There are also not many immortalized treeshrew cell lines available. Unfortunately, several tools needed to study treeshrews, such antibodies specific to the species, are lacking. As a result, the fundamental research on treeshrews should continue to be on achievement transformation to broad use.

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