



Cats face various threats from bacteria, viruses, and other harmful agents. Their immune system plays a vital role in keeping them healthy. White blood cells, or leucocytes, work to identify and destroy these invaders before they can spread. However, immune responses can sometimes become problematic, leading to allergies or autoimmune disorders. As cats grow older, their immune system naturally weakens, leaving them more vulnerable to infections.

Protection at Birth

Kittens are born with underdeveloped immune systems, making them prone to infections. However, they receive significant protection through their mother's milk. The first milk produced after birth, called colostrum, is packed with antibodies. This nutrient-rich milk only lasts for about 72 hours after birth and provides external antibodies from the mother to the kittens. These antibodies protect the kittens for the first 8-10 weeks, giving them time to develop their own immune response. Research indicates that colostrum is most effective when consumed within the first 18 hours of life. During this period, antibodies pass through the intestinal wall and enter the kitten's bloodstream. After this window, the kitten's body loses the ability to absorb the antibodies from the mother.

Outdoor Cats and Infection Risks

Outdoor cats face a higher risk of infection compared to indoor cats. They can contract parasites through contact with other animals, encounter environmental toxins, or suffer injuries from traffic or other animals.



How the Cat's Immune System Works

The immune system includes all body parts involved in protecting against infections. The first line of defense is the skin and mucous membranes, which act as barriers. The strong acid in a cat's stomach kills many pathogens that enter through the mouth or nose. However, if pathogens manage to enter through cuts or tears, white blood cells step in to fight them off.

White blood cells are produced in the bone marrow and circulate in the bloodstream and lymphatic system. The lymphatic system is a network of vessels that drains lymph fluid from body organs. The lymph nodes, scattered throughout the lymphatic system, contain white blood cells that filter germs from the lymph fluid. Other immune-related organs include the tonsils, thymus, spleen, and the lining of the small intestine.

There are several types of white blood cells, each with a specialized function:

- Neutrophils: Attack and destroy bacteria and fungi at the site of infection.
- T-lymphocytes: Regulate B-lymphocytes and attack virus-infected and cancerous cells.
- B-lymphocytes: Produce antibodies that neutralize pathogens.
- Eosinophils: Target parasites and play a role in allergic reactions.
- Macrophages: Digest pathogens marked by other white blood cells.

Allergies, Autoimmunity, and Immunodeficiency

Cats can develop allergies, which manifest in symptoms like itchy skin, sneezing, wheezing, vomiting, and diarrhea. These allergic reactions occur when the immune system overreacts to a usually harmless substance. Common allergens include fleabites, certain proteins in food (such as chicken or beef), airborne particles (pollen), and contact with materials like



wool or detergent.

The best treatment for allergies is to identify and eliminate the trigger. However, it may be challenging to pinpoint the exact cause. A veterinarian may prescribe antihistamines to relieve symptoms. Fleabite allergies may require pest control measures.

Autoimmune disorders arise when the immune system attacks its tissues. Although rare in cats, autoimmune diseases include conditions like pemphigus complex, affecting the skin, and systemic lupus erythematosus (SLE), which impacts multiple systems. Additionally, some feline infections, like feline immunodeficiency virus (FIV) and feline leukemia virus (FeLV), compromise the immune system, making cats more susceptible to infections and cancer.

The Impact of Stress on the Immune System

Stress has a significant impact on a cat's immune system. Changes in their environment, such as a new pet, a new baby, or even rearranged furniture, can lead to stress. Stress triggers the release of hormones like adrenaline and cortisol, which, when prolonged, suppress the immune system. This suppression weakens the cat's ability to fight infections or recover from illnesses. During stressful events, the brain releases endorphins, natural painkillers that help reduce the pain from injuries such as scratches or bites during fights.

Vaccinations and Immunization

Vaccination is a critical part of preventing infectious diseases in cats. Vaccines stimulate the production of antibodies, which help cats build immunity against diseases without causing the illness. Common vaccinations protect against diseases such as feline infectious enteritis,



feline herpes virus, and feline calicivirus.

Veterinarians recommend initial vaccinations during kittenhood, followed by annual booster shots to maintain immunity. The type of vaccines needed varies based on the cat's lifestyle, such as whether they live indoors or outdoors. Immunizations boost the immune system, allowing cats to defend themselves against various harmful microorganisms.

A cat's immune system is complex and involves many organs and cells working together to protect against infections. Understanding how the immune system functions, how to manage allergies and stress, and the importance of vaccinations can help maintain a healthy and strong immune system throughout a cat's life. Ensuring regular vet visits and proper care plays a significant role in keeping the immune system functioning well as your cat ages.

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