PURINA Institute

Advancing Science for Pet Health

HOT TOPIC

Nutrition and the immune system

In focus

Good nutrition is essential to ensure a strong immune system throughout the life of cats and dogs. Age, disease or stress can all affect the immune system. Diet plays an important role to optimize immune function and ultimately strengthen the natural defense and immune response.

The Purina Institute provides the scientific facts to support your nutritional conversations.

let's takeback the conversation.

Learn more about the power of nutrition at **PurinaInstitute.com**

How does the immune system work?

The immune system is a complex network of cells, tissues, and organs, which work together to help the body fight infections and disease. About 70% of immune cells are found in the gut, protecting the body from harmful (pathogens) or foreign substances (antigens).[1]

When the immune system recognizes an antigen, e.g., bacteria, viruses, it initiates an '**immune response**'. This involves the production of antibodies, specific proteins that work to attack, weaken, and destroy antigens, and the activation of specific lymphocytes.

Protection against a certain disease is called **immunity**; there are 3 types:

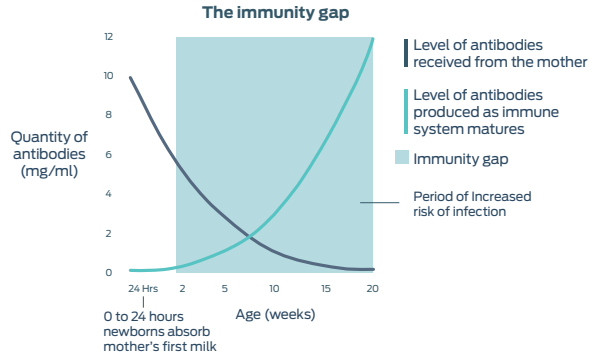
Innate	The body's first line of defense: barriers including the gut, skin & mucous membranes, preventing harmful substances from entering the body
Active or adaptive	Develops when a pet is infected with or vaccinated against a disease; usually long lasting
Passive	Antibodies from the puppy or kitten's mother; provides immediate protection, but only lasts a few weeks or months

PURINA Institute

Advancing Science for Pet Health

How does age affect the immune system?

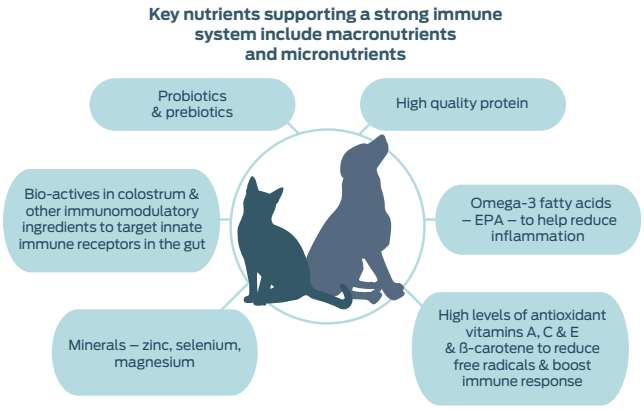
Newborns absorb antibodies from colostrum (the mother's first milk), providing vital protection during the first 10–12 weeks of life. However, this adopted maternal immunity declines over time, creating a potential gap in protection while the puppy or kitten's own immune system is maturing. Known as the "immunity gap", this can increase vulnerability to infections and digestive upsets.



Nutritional supplementation may help bridge this gap to provide protection during this critical period of development.[2,3]

Aging is associated with a decline in immune function and, similar to young pets, older adults are more susceptible to infections.

How can nutrition support a strong immune system?



Protein is essential and studies indicate amino acids (e.g. arginine & glutamine) play an important role in immune response by regulating some of the key cells involved (e.g. activation of lymphocytes) and production of antibodies. A deficiency of dietary protein and loss of lean body mass can impair immune function and increase susceptibility to infections and other stresses.[4]

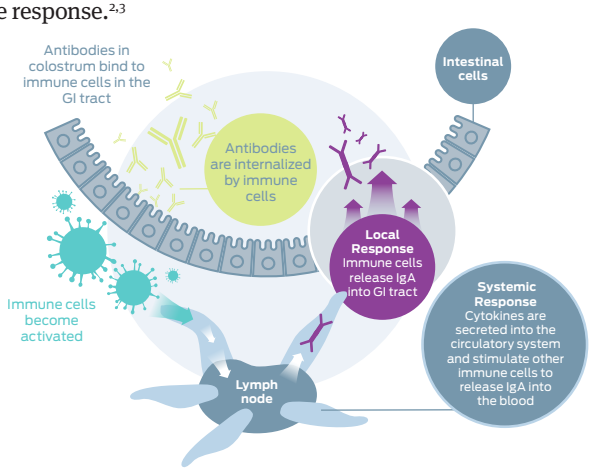
Can nutrition affect the immune response?

Studies show certain nutritional interventions can positively influence the immune response in cats and dogs.

Probiotics - *Enterococcus faecium* SF68 has been shown to improve several specific and non-specific immune responses when fed to cats and dogs.[5,6] Young dogs fed SF68 had enhanced immune function (increased fecal Ig A levels, enabling the gut to fight pathogens) and an enhanced vaccination response to the canine distemper virus.[6,7] A positive impact on the immune system of cats (increased lymphocytes) has also been shown when supplementing with SF68.[5]

A recent study showed supplementing adult dogs with SF68 can induce immunomodulation within 4 weeks.[8]

Bio-actives in bovine colostrum – studies show feeding the bio-actives and antibodies in bovine colostrum can provide benefits throughout life. Antibodies in colostrum interact directly with immune cells in the gut, initiating a beneficial immune response.[2,3]



Studies show that when fed diets supplemented with bovine colostrum bio-actives, both kittens[2] and adults dogs[3] have stronger responses to vaccinations.

Can nutrition help the immune response against disease or infection?

Since compromised immune systems result from various factors, there is no evidence that nutrition can alleviate signs. However, feeding commercial diets formulated with nutrients known to play a direct or indirect role in supporting the functioning of the immune system (and quality of the immune response) will provide benefits.

Feeding raw foods, which can be contaminated with pathogenic bacteria, is strongly discouraged.[9]

References

1. Vighi, G. et al. (2008). Allergy and the gastrointestinal system. *Clinical and Experimental Immunology, 153* (S1) 3–6.

2. Jean-Philippe, C. Beneficial effects of dietary colostrum supplementation in kittens, *Nestlé Purina Scientific Update of Feline Nutrition*, Issue 4, 1–8.

3. Satyaraj, E. et al (2013). Supplementation of diets with bovine colostrum influences immune function in dogs. *British Journal of Nutrition, 110*(12), 2216–2221.

4. Datz, C. A. (2010). Noninfectious causes of immunosuppression in dogs and cats. The Veterinary Clinics of North America. *Small Animal Practice, 40*(3), 459–467.

5. Veir, J. K. (2007). Effect of supplementation with Enterococcus faecium (SF68) on immune function in cats. *Veterinary Therapeutics, 8* (4): 229–38.

6. Benyacoub, J. et al. (2003). Supplementation of food with Enterococcus faecium SF68 stimulates immune function in young dogs. *Journal Nutrition, 133*: 1158–62.

7. Satyaraj, E. (2011). Emerging paradigms in immunonutrition. *Topics in Companion Animal Medicine 26*(1):25–32

8. Lappin, M. et al (2017). Effect of a commercially available probiotic on immune responses in healthy dogs. ACVIM Abstract NM05.

9. Hellgren, J. et al (2019). Occurrence of Salmonella, Campylobacter, Clostridium and Enterobacteriaceae in raw meat-based diets for dogs. *Veterinary Record 184*, 442.