

HOT TOPIC

Essential fatty acids in pet food



In focus

Pets obtain essential fatty acids from their diet. What are these fatty acids, and how do they support pet health?

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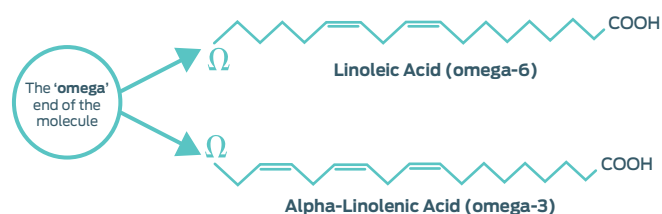
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What are essential fatty acids?

Fatty acids, a component of fats, can be divided into two groups:

- **Essential fatty acids** must be provided in the diet as they cannot be produced in the body.
- **Non-essential fatty acids** can be supplied in the diet but can also be produced in the body.^{1,2}

Essential fatty acids include both omega-6 ($\Omega 6$) and omega-3 ($\Omega 3$) fatty acids. The '6' or '3' simply refers to the position of the first double bond in the structure of the fatty acid relative to the 'omega' end of the molecule.

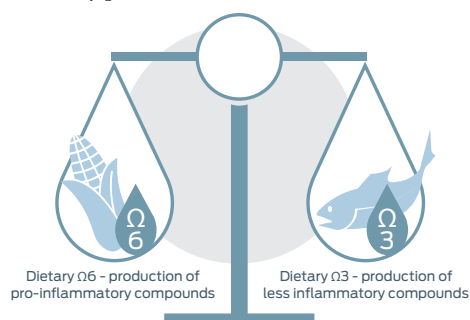


Double lines indicate locations of double bonds.

Essential fatty acid	Dogs and/or cats	Sources in pet foods	Functions in the body
Linoleic acid ($\Omega 6$)	Dogs & cats	Corn oil, safflower oil, soybean oil, sunflower oil	Vital to skin health (helps retain skin moisture by forming a barrier preventing water loss). Optimal growth. Promotes a strong immune system. Precursor for the formation of other $\Omega 6$ fatty acids. ^{1,2}
Arachidonic acid ($\Omega 6$)	Cats (unlike dogs, they cannot make enough from linoleic acid)	Animal fats only, e.g., chicken fat	Structural component of all cell membranes. Key role in brain development. Supports reproduction. Influences inflammation – converted primarily to pro-inflammatory compounds. ^{1,2}
Alpha-linolenic acid (ALA) ($\Omega 3$)	Dogs & cats	Flaxseed oil, canola oil, soybean oil	Supports skin health. Precursor for other $\Omega 3$ fatty acids, e.g., EPA and DHA. ^{1,2}
Eicosapentaenoic acid (EPA) ($\Omega 3$)	Dogs & cats – 'conditionally essential' during growth, gestation, and lactation (unable to produce sufficient from ALA to support optimum development) ¹	Fish oil, oily fish (e.g., salmon, trout)	Structural component of cell membranes. Influences inflammation – converted to anti-inflammatory compounds. ^{1,2}
Docosahexaenoic acid (DHA) ($\Omega 3$)			Optimal brain and retinal development in puppies and kittens. ^{1,3}

Fatty acids and inflammation

Inflammation is a normal part of the body's healing and protective immune processes. Severe or chronic inflammation, however, can be detrimental to health; the goal is to manage ('balance') the inflammatory process.



Both omega-6 and omega-3 fatty acids are used to make compounds involved with the inflammatory response to injury and infection. In general, omega-6s are converted to compounds that 'promote' inflammation and omega-3s to compounds that help resolve inflammation. This is why omega-6s are often referred to as 'pro-inflammatory' and omega-3s as 'anti-inflammatory'. However, this should not be inferred that omega-6s are 'bad' and omega-3s are 'good'; both are necessary to manage inflammation. Adjusting dietary levels of omega-6s and omega-3s influences their levels found in cell membranes, which ultimately can influence the degree of inflammation in the body.^{1,2}

When do pets benefit from increased fatty acids in the diet?

- Increased levels of linoleic and alpha-linolenic acid help to retain skin moisture and restore coat luster in pets with dry, flaky skin or coarse, dull coats.¹
- Studies have shown increased EPA and DHA can help reduce clinical signs in dogs with allergic skin conditions, e.g., itching.^{4,5} Conversion to EPA and DHA from ALA is not efficient in the body, so a source of EPA and DHA, e.g., fish oil, is added to the diet when increased amounts are needed.^{1,2}
- Purina research has shown that feeding a therapeutic diet high in EPA and DHA can help improve mobility in arthritic dogs.⁶
- Providing dietary DHA to both the pregnant or nursing mother and her puppies or kittens helps support optimal brain development and vision both *in utero* and after birth.¹ Puppies' brains grow rapidly reaching 90% of adult brain mass at 3 months of age.⁷ Fat comprises 60% of the brain with DHA the brain's most abundant fatty acid and a key component of both grey and white matter, which are essential for brain function, e.g., learning and memory.³
 - Purina research has shown that a high DHA diet improved trainability⁸ and visual acuity⁹ in puppies.

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