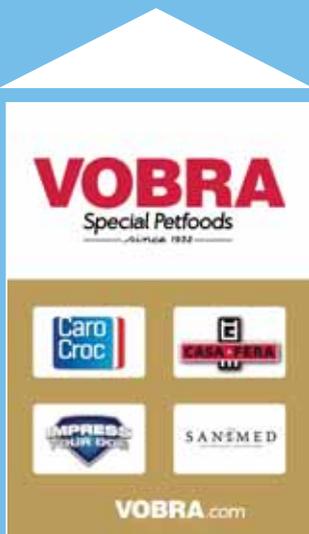




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Fish for cats

Many cat foods carry a product name including a fish species, list fish as the first ingredient, feature a fish flavor or come in fish-shaped kibbles. This makes believe that cats love to eat fish. However, cats do not consistently prefer commercial foods containing fish over similar foods containing beef or poultry.

All fish are not created equal. Raw fish is thought to produce deficiency of vitamin B1 (thiamine) in cats, but among six fish species only raw carp and herring, as exclusive nutrition, induced loss of muscle control. Being a dominant component of a ration low in vitamin E, oily fish rather than white fish may provoke painful, inflammatory changes in fat tissue under the skin.

Fish alone is not nutritionally complete, and therefore should be part of a balanced diet, but it can take along undesirable quantities of specific substances. Cats are probably exposed to more mercury, selenium, iodine and organobromides from eating fish-based wet foods than from other types of foods. The excessive selenium concentrations in seafood-flavored wet foods may not negatively affect feline health. Long-term ingestion of mercury, at the highest food levels observed, causes loss of muscle coordination. Iodine and organobromides in fish-based wet foods seem to be risk factors for overactive thyroid disease, but the indications are disputable.

Given the potential risks associated with fish, it is appropriate to feed cats small amounts of fish of varying species. A certain brand of fish-based, canned or pouched food should not be fed as the sole or major source of nutrition. Fish-based typically matches fish-first in the ingredient list. Cat diets containing less than 50% wet food (more than 50% dry food) go together with less thyroid disease. The link is not proven causative, but it is prudent to feed a limited wet-food diet.

Palatability

Cats which ate freely for 1 hour every two days preferred salmon over commercial foods containing beef, fish or chicken (1). House cats liked canned pilchard better than canned meat mixture, but farm cats had an opposite desire (2). Three preference studies in laboratory cats showed inconsistent results for wet or dry foods containing fish instead of beef or poultry (3-5).

Thiaminases

Unlike four other fish species, raw carp or herring, as only source of nutrition, induced anorexia and weight loss within two weeks, followed by ataxia and head ventroflexion (6). The cats' signs were reversed by thiamine injection. Thiaminase activity, which is species dependent (7-9), and thiamin content of the six raw fishes are not reported (6). A clinical report on thiaminase poisoning in cats (10) lacks details.

Steatitis

Kittens fed only cooked sardines showed steatitis symptoms after 27 days: fever, inappetence, lethargy, and then nodular subcutaneous fat (11). The origin is peroxidation of sardine-derived omega-3 fatty acids in adipose tissue due to vitamin E deficiency. Early case reports link steatitis and canned foods rich in oily fish (12-14) and low in vitamin E (15). Home-prepared, fish-based rations entail some risk to steatitis (16).

Mercury

Analysed total mercury concentrations in commercial cat foods ranged from 0.001 to 2.5 ppm (mg/kg dry matter, throughout this text) (17). Wet, fish-based foods had the highest levels, most likely in the form of the neurotoxin, methylmercury, which bioaccumulates up the food chain. Experimental foods with mercury contents as high as 1.2 ppm, embodied by methylmercury chloride or methylmercury in pike, did not induce clinical signs within two years, but 2.7 ppm provoked ataxia after 60 weeks (18).

Selenium

The selenium allowance for adult cats is 0.3 ppm (19). Total selenium in commercial cat foods ranged from 0.2 to 6.1 ppm (20, 21). Seafood-flavored, wet foods were highest in selenium of unknown availability. There are no reports of chronic feline selenosis. High selenium intake (8.5 versus 0.6 ppm) for three weeks raised plasma selenium markedly, but without toxicity signs (22).

Iodine

In adults cats, iodine intake at 0.2 ppm did not induce deficiency within two

years (23, 24), while intoxication was not observed at 21 ppm for five months (25). The iodine allowance is set at 1.4 ppm (19). Commercial cat foods contain 0.2 to 155 ppm, values higher than 6.3 being represented by wet foods only (26-29), among them products with iodine-rich marine fish (27, 30). More than 50 weight% wet food in the diet is a consistent risk factor for hyperthyroidism (31-34), which corroborates the hypothesis that wide swings in iodine intake initiate hyperthyroidism (35, 36).

Organobromides

Wet food as risk factor for hyperthyroidism might relate to methoxylated, polybrominated diphenyl esters (MePBDEs), which are thought to act as thyroid disruptors (37). Among fish-based cat foods, wet foods contained 20-fold higher concentrations of MePBDEs than dry foods (38). PBDEs are used as flame retardants, but MePBDEs can be synthesized by some marine organisms (39).

EPA

Cat foods for the support of skin, joints and kidneys generally include fish oil because of its EPA (eicosapentaenoic acid) component. The efficacy of fish oil in the treatment of feline inflammatory dermatoses (40, 41), osteoarthritis (42, 43) and chronic kidney disease (44) remains unconvincingly demonstrated.

Fish as allergen

Food allergy probably occurs in no more than 0.05% of the cat population (45), fish being responsible for one seventh of the cases (46).

List of references is available on request from the author (beynen@freeler.nl)

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