



Trichinosis and Raw Pork

By Laura Duclos, PhD

Nature's Variety would like to make you aware of a recent change in the Rabbit Formula Raw Frozen Diet for dogs and cats. Because we are no longer able to source a sufficient supply of rabbit organs for this raw diet, we researched viable alternatives and have chosen to now use natural pork fat, liver, and heart in place of rabbit liver, lung, and heart.

We chose pork as a new source of organ ingredients because pork is hypo-allergenic and highly palatable. Also, of all animal-based protein, pork protein is the most digestible and has the most favorable amino acid profile. Our pork ingredients are 100% natural, free of antibiotics and growth hormones, and sourced from USDA inspected facilities.

Some people have expressed concern, however, about the potential for trichinosis (or trichinellosis) from raw pork. Please be assured that this is not a concern. We welcome you to read the information below to learn more.

What is Trichinosis?

Trichinosis is the clinical term for the disease caused by a tiny nematode parasite, *Trichinella* spp. First identified in 1835, 4 main sister species of *Trichinella* were identified in 1895 and classified based upon epidemiological cycles – domestic, temperate, torrid, and frigid. *Trichinella* that infected pork and pork products is the domestic species having an urban life cycle (*Trichinella spiralis*). The temperate, torrid, and frigid species having a sylvatic cycle (*Trichinella nativa*) infects wolves and other wild prey animals.

Trichinella spiralis life cycle

Biologically, this nematode is unique because it can use the same animal species as both intermediate host (location where larvae grow) and definitive host (location where adults mate and produce eggs). When an animal eats raw meat infected with a larval worm, the larva develops into an adult in the animal's small intestine. After mating, eggs develop inside the female worm and she gives birth to hundreds of larvae. Adults soon die and are passed in the feces.

The larvae penetrate the intestinal wall and are carried throughout the body by the circulatory system. When the larvae reach striated muscle tissue, they begin to burrow and invade individual muscle cells (skeletal muscle, diaphragm, heart, and esophagus). Once inside a muscle cell, the larva reprograms the cell, turning it into an incubation chamber where it waits until another host comes along and eats the muscle meat in which the larva resides.

Dogs, cats, humans, rats, pigs, and just about any other carnivorous or omnivorous mammal may serve as hosts and infection sources for *T. spiralis*.

History of Pork and Trichinosis

Many people associate pork with trichinosis. The pork produced today, however, is a cleaner and healthier protein source than it has ever been.

Pigs are omnivores and can tolerate quite a wide array of feed stuffs. Pork obtained its bad reputation in the early 20th century when pigs were often fed raw garbage containing raw meat scraps (mainly pork scraps from the slaughter house). This garbage often attracted rats, so pigs also consumed rats. Rats were the primary animals that spread infection to the pigs. Thus, the dirty feeding practices carried out at pig farms perpetuated the life cycle of *Trichinella*. Feeding raw garbage to pigs has been banned (CFR 9(1)166).

In the 1950's, before these feeding practices were banned, the Centers for Disease Control (CDC) and the Food and Drug Administration (FDA) began an extensive public health campaign to bring awareness to the dangers of undercooked pork. The government then required pig farms to cease feeding raw meat and garbage to pigs. About the same time, the beef industry began "negative" marketing against pork in an effort to persuade consumers to buy beef. Thus, pork was viewed as bad.

Pigs raised today are different from those of the 1950's. The prevalence of *Trichinella* in commercial pork products is virtually zero. Human cases of trichinosis are rare – less than 12 cases per year compared to over 350 cases per year in the 1950's (Roy et al., 2003 and tables/figures below). Almost all the cases are from home prepared meat products and very few from commercially raised or prepared pork.

Nature's Variety Pork will not cause Trichinosis

The pork used in Nature's Variety Raw Frozen Diet is from vegetarian fed hogs. These hogs are certified free of added antibiotics and growth hormones. Because of this high meat cleanliness and quality, the natural pork hearts, liver, and fat used by Nature's Variety is more expensive and harder to obtain.

Trichinella larvae cannot survive freezing temperatures (Doyle, 2003; Malakauskas and Kapel, 2003). Our raw meat diets are frozen immediately after manufacture and stored in our cold storage warehouse at -10°F for approximately 2 weeks. Freezers at the distributor and at the retail store are kept 0°F, an appropriate temperature given the prior hard freeze (-10°F) for 2 weeks. Thus, Raw Frozen Diets purchased by the consumer are safe and will not transmit *Trichinella*. Fourteen days is the standard length of time declared by the CDC as appropriate to kill any *Trichinella* larvae.

Nutritional Quality of Pork

Selective breeding has created hogs that are leaner and healthier than ever. In fact, pork is a rich source of lean protein with a favorable amino acid profile (Schweigert et al., 1949). The fat content of most pork products is equal to that of chicken (USDA database). Moreover, university research on alternative protein sources for pet food has shown pork to be highly palatable and digestible (Dust et al., 2005). Pork is interchangeable with rabbit and other meat species (Wills and Simpson, 1994) and is considered hypoallergenic because it is not commonly used in pet food. In fact, sled dogs fed a raw meat diet containing pork have exhibited optimal performance (Kronfeld, 1977).

References

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The following tables are taken from the CDC's MMWR July 25, 2003:

TABLE 2. Outbreaks of trichinellosis among patients, by year, state, number of cases, month of illness onset, and implicated meat — United States, 1997–2001

Year	State	No. of cases	Month of illness onset	Implicated meat
1997	Montana	5	December	Bear jerky
1998	Ohio	8	October–November	Bear roast and ground bear meat
1999	Illinois	2	March–May	Pork sausage and pork jerky
2000	Illinois	2	January	Pork sausage and smoked pork
2000	Alaska	4	August–September	Bear steak (fried)
2001	California	2	May	Home-raised pork
2001	California	6	May–June	Home-raised pork (raw)
2001	California	2	August	Bear
2001	California	2	November	Bear
Total		33		

TABLE 3. Number and percentage of trichinellosis cases, by type and source of implicated meat product — United States, 1997–2001

Meat type/Source	No.	(%)
Pork products	22	(31)
Commercial	12	(17)
Sausage	4	(6)
Chops	1	(1)
Ham	1	(1)
Pickled pigs feet	1	(1)
Sausage and chops	1	(1)
Sausage and smoked pork	2	(3)
Unspecified	2	(3)
Direct from farm	9	(13)
Hunted (wild boar)	1	(1)
Nonpork products	30	(42)
Bear meat	29	(40)
Cougar meat	1	(1)
Unknown	20	(28)
No information	15	(21)
Both pork and nonpork	5	(7)
Commercial pork chops, bacon, hamburger	1	(1)
Commercial pork roast, ham, bacon, moose/quail/pheasant meat	1	(1)
Commercial pork roast, hamburger	1	(1)
Commercial pork sausage, ham, hamburger	1	(1)
Commercial pork sausage, sliced beef	1	(1)
Total	72	(100)*

* Might not total 100% because of rounding.

FIGURE 5. Number of reported trichinellosis cases, by year — United States, 1947–2001

