

Research Report

OPTIMAL DIET OPTIONS FOR PREVENTING AND MANAGING TYPE 2 FELINE DIABETES

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Abstract

Type 2 feline diabetes is a common disease. The most important, controllable risk factor that cat owners need to be aware of is obesity. Many commonly available cat foods have a nutritionally poor composition. The goal of this research is to determine the proper nutritional composition to meet the unique needs of the domestic cat's digestive system. This report presents a further overview of type 2 feline diabetes, its causes, and concludes with specific dietary recommendations.

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Introduction

One of the most common diseases cats are susceptible to as they grow older is type 2 feline diabetes, accounting for approximately 90% of all feline diabetes cases (Gottlieb & Rand, 2018, *Diet*). According to the NCBI, there are several factors that can increase a cat's risk of developing type 2 diabetes (see *fig. 1*).

Type 2 Feline Diabetes Risk Factors		
Risk factor	Highest risk	Owner controlled
Age	Senior cats	No
Gender	Male cats	No
Bodyweight	Obesity	Yes
Indoor/outdoor	Indoor	*
Activity level	Low activity	*
Breed	Susceptible breeds (varied)	-
Medication	Long-acting or repeated steroid or megestrol acetate administration	-

(*) some owner control

(-) minimal or no owner control

Source Adapted from (Gottlieb & Rand 2018, *Diabetes in cats*).

FIGURE 1 Type 2 Feline Diabetes Risk Factors

Of those risk factors that cat owners can control, obesity poses the highest risk to their cat, with overweight cats being 4-6 times more likely to develop type 2 diabetes than their ideal body weight counterparts (Gottlieb & Rand 2018, *Diet*).

Cats, unlike dogs, are obligate carnivores (or a *true carnivore*). According to Dr. Becker (2016), "True carnivores lack the physiology required for the efficient digestion of vegetable matter," and "The domestic cat is a prime example of an obligate carnivore."

In the wild, the naturally sourced diets of feral domestic cats consists primarily of small animals, like mice, rats and birds. Domestic cats' digestive systems have evolved to require a diet that is very low in carbohydrates, high in protein, and with moderate fat. A well-planned diet that meets the unique nutritional needs of a domestic cat will give it the best chance to survive and thrive in the wild as well as in a comfortable, loving home.

This report provides specific recommendations for commonly available foods, including essential nutritional information and approximate cost, that meet the unique dietary needs of domestic cats.

Research methods

The research began with two important questions. First, “what causes type 2 feline diabetes?” And second, “what can owners do to minimize their pets risk of developing the disease, or managing the disease for those pets that have already developed it?” To answer these questions, we performed the following four tasks.

Task 1: Research type 2 feline diabetes and its causes

Research started with basic online searches, which eventually led me to detailed information on the topic published by veterinarians and other reputable online sources. I reviewed the information in depth, collecting resources, and acquiring a deeper overall understanding of the disease. As expected, I found evidence that one cause in particular, obesity, was at the heart of most acquired cases of the disease.

Task 2: Establish the role diet plays and the proper nutritional guidelines

With the understanding that obesity is the most common reason cats acquire type 2 feline diabetes, I looked for the cause of obesity. The research revealed that the number one reason cats become obese, aside from poor portion control, is a diet that is poorly suited to their unique nutritional needs.

According to Pierson (2017, *Using the Chart*), as obligate carnivores, cats “are metabolically designed to consume diets with the following general composition”:

1. animal (not plant)-based **protein** (>50% calories)
2. moderate **fat** (~20-40% calories)
3. very low **carbohydrate** (1-2% calories)
4. **water**-rich (~70%)

Task 3: Evaluate the data and research commonly available types and brands of foods to determine the best options for owners

Given the nutritional requirements, I was able to begin searching for suitable foods that most consumers will recognize and have easy access to. Using the *Cat Food - Nutritional Composition Chart* (Pierson, 2016), as a reference guide, I looked for common brands of store bought foods that are available on all three of the following websites:

- a. Amazon.com
- b. Walmart.com
- c. PetSmart.com

Given that the information contained in this report is intended for general audiences, additional research was not performed on a local level to ensure the highest degree of accessibility.

Task 4: Analyze our findings and prepare a recommendations report:

Finally, I drafted this report covering the general risk factors that cats face for acquiring type 2 feline diabetes, the dietary needs of cats, and a set of recommendations based on our findings.

Results

Initial research indicates that the most common cause of type 2 feline diabetes is obesity. Obesity can be caused by a number of factors, including genetics, but more importantly, the primary cause is a poorly balanced diet.

Cats are obligate carnivores, which means that they require a high protein, low carbohydrate diet. Their digestive systems are not designed to process vegetable or plant matter. To maintain a healthy body weight, a cat should maintain a diet with a caloric composition of >50% protein, 20% - 40% fat, 1% - 2% carbohydrates, and approximately 70% water.

Given these parameters, a diet of kibble (or dry food) is not recommended. Dry food has very little moisture content and a very high carbohydrate content, which helps hold the food together. To maintain a healthy body weight, the research suggests that the best course of action is a diet consisting entirely of wet food.

After analyzing more than 20 common brands of foods and dozens of flavor varieties, the research yielded only nine brand/variety foods that meet the nutritional requirements previously mentioned. Among those, only five varieties are available on more than one of the three websites we analyzed, and only two are available across all three websites (see *fig. 2*). They are:

- Fancy Feast Natural (All varieties)
- Natural Balance Delectable Delights - LID Tuna & Pumpkin cups
- Pro-Plan Focus - Kitten Salmon & Oceanfish
- Royal Canin Calorie Control - Pate
- Meow Mix Tender Favorites in Sauce - Tuna & Shrimp

Recommendations

The research used to draft this report found nine commonly available foods that precisely meet the nutritional needs of domestic cats (see *fig. 2*). However, only five of the nine selected varieties are available at two or more of the reference websites. Three were not found on these websites at all. Fortunately, all of the recommended foods are available at other popular websites outside of the scope of this research, including:

- Chewy.com
- Target.com
- Petco.com

Figure 2 Cat Food Recommendations & Nutritional Composition

Brand & Variety		Caloric Distribution			Cost Per Ounce			
Brand	Flavor/Style	Protein %	Fat %	Carb %	PetSmart.com	Amazon.com	Walmart.com	Avg.
Fancy Feast	Natural (All varieties - approx. values)	74	25	0	\$0.30	\$0.28	\$0.28	\$0.29
Natural Balance	Delectable Delights - LID Tuna & Pumpkin cups	67	32	1	\$0.67	\$0.29	-	\$0.32
Pro-Plan	Focus - Kitten Salmon & Oceanfish	73	26	2	\$0.32	\$0.32	\$0.32	\$0.32
Royal Canin	Calorie Control - Pate	58	32	1	\$0.33	\$0.51	-	\$0.28
Iams	Purrfect Delights - Winner, Winner with Chicken Dinner	53	46	2	-	-	\$0.85	\$0.28
Meow Mix	Tender Favorites in Sauce - Tuna & Shrimp	66	33	2	-	\$0.43	\$0.19	\$0.21
Natural Balance	Delectable Delights - LID Chicken & Pumpkin cups	68	29	3	-	-	-	-
Nature's Recipe	Grain Free in Broth - Chicken & Turkey	58	40	2	-	-	-	-
Nature's Recipe	Grain Free in Broth - Indoor	65	34	2	-	-	-	-

(-) Not found

Source Adapted from (Pierson, 2017)

FIGURE 2 Cat Food Recommendations & Nutritional Composition

This list is not comprehensive. It is a list of recommendations that, based on the research, fulfill all of the nutritional requirements to exact specification. However, it should be noted that this is not a comprehensive list. Other varieties are equally as good, but they were not included in this report due to a margin of error not accounted for by the manufacturer.

According to Pierson (2017), the carb values provided by manufacturers are “calculated by subtraction. In other words, we add up the moisture + protein + fat + fiber + ash and subtract that value from 100% leaving us with the carbohydrate fraction.” Pierson continues, “stick with the directive to stay below 10%

carbohydrates but do NOT get caught up in whether a diet says 10%...or 5%...or 0% because these numbers are just not that accurate.”

In conclusion, I recommend owners do further research on their own. A good place to start is by using the resources provided in this report. In particular, the *Cat Food - Nutritional Composition* chart (Pierson, 2017) offers a complete compositional breakdown for dozens of brands and varieties of foods. Owners should look for foods that are high in protein (>50%), moderate fat (20% - 40%), and with less than 10% carbohydrate caloric content.

By spending a little extra time now to find the right food, owners will potentially save years of heartache for both themselves and their pet down the road.

Cost & Schedule

Research on this project began on Monday and was completed and submitted as per our agreed timeline. See *Figures 3a and b* for the project schedule and final project cost breakdown.

Figure 3a Research Project Schedule

Number	Task	M	T	W	T
1	Perform research	■			
2	Analyze nutrition content		■		
3	Formulate recommendations			■	
4	Prepare report				■

Figure 3b Research Project Cost

Task #	Hours Worked	Hourly Rate	Sub Total
Perform research	8	\$50.00	\$400.00
Analyze nutrition content	6	\$50.00	\$300.00
Formulate recommendations	6	\$50.00	\$300.00
Prepare report	12	\$50.00	\$600.00
Total Cost:			\$1,600.00

FIGURE 3a&b Research Project Schedule & Cost

References

Becker, Dr. (2016). Got Cats and Dogs? Do This in a Pinch, But Don't Make a Habit of It. Retrieved from [http://\(https://healthypets.mercola.com/sites/healthypets/archive/2016/01/04/dog-cat-species-appropriate-diets.aspx###targetText=Cats%20are%20obligate%20carnivores%2C%20whereas.definition%20of%20an%20obligate%20carnivore%3A&targetText=Dogs%20are%20scavenging%2C%20or%20facultative.plant%20material%20alone%20if%20necessary.](http://(https://healthypets.mercola.com/sites/healthypets/archive/2016/01/04/dog-cat-species-appropriate-diets.aspx###targetText=Cats%20are%20obligate%20carnivores%2C%20whereas.definition%20of%20an%20obligate%20carnivore%3A&targetText=Dogs%20are%20scavenging%2C%20or%20facultative.plant%20material%20alone%20if%20necessary.)

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