

Authors: Juliana Kong, Julia Lancaster

Mentors: Peggy R. Borum, Samantha Waterman, R. Mitchell Faloona, S. Parrish Winesett
Food Science and Human Nutrition Department

Abstract

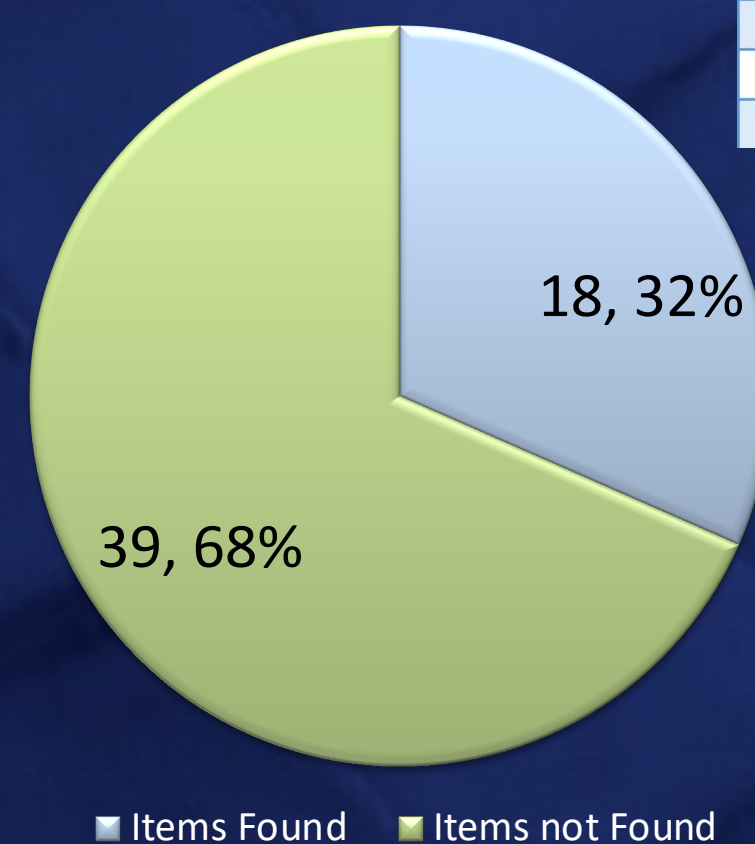
Patients undergoing Precision Ketogenic Therapy (PKT) are required to keep close track of the specific nutrient composition of everything that they eat. The PKT Program provides these families with PKT using precise nutrient amounts from the Foodomics Database. The nutrient information for non-branded foods in the Foodomics Database comes from a database (SR Legacy) maintained by the USDA that is being retired and replaced with a new database called Foundation Foods. This study compares the macronutrient data available in the SR Legacy with that in the new Foundation Foods for 62 of the foods commonly used in recipes by patients undergoing PKT. It was hypothesized that there would be slight differences in the protein, fat, and carbohydrate composition per 100g of these items, but more differences were found than expected. There was a difference in specificity of foods between the two databases. For example, instead of just "onions" (SR Legacy), the Foundation Foods database consisted of different types of onions (red, white, and yellow). For **39 of the 57 items which were analyzed**, no data was currently available in the Foundation Foods, but this may be because the database is new and is not yet complete. In conclusion, the lab cannot yet transition fully to the Foundation Foods due to the lack of available items, but data from the newer database should be used when possible due to its increased specificity and precision.

Introduction

Foundation Foods are non-branded and non-supplement foods that are a component of Precision Ketogenic Therapy (PKT). Many Foundation Foods, like fresh produce, do not have displayed nutrient facts information within a retail market. In this investigation, the macronutrient values of specific foundation foods were retrieved from a new USDA database entitled Foundation Foods. This database replaces an older USDA database entitled SR Legacy.

Methods

1. Obtained list of high priority Foundation Foods used in PKT
2. Input nutrition data obtained from SR Legacy for these items into a spreadsheet
3. Added macronutrient data from Foundation Foods to spreadsheet for a side-by-side comparison
4. Noted any observed differences in available data between the two sources



Foundation Food items found and not found

Results

Many foods that were listed in the SR Legacy database as a singular item were available in multiple varieties within Foundation Foods. For example, while SR Legacy contained only "Onions, Raw", Foundation Foods provides separate information for red, white, and yellow onions. This increased variety occurred for 8 items, so even though data corresponding to only 18 items was obtained, 31 separate Foundation Foods entries were found. Of these 31 items, 25 showed a difference of more than 0.1g of carbohydrates per 100g serving between the Foundation Foods and the SR Legacy data.

NDID	FDCID	Product Name	grams_Pro_per_100g	grams_Fat_per_100g	grams_Cho_per_100g
ND01473		Onions, raw	1.1	0.1	9.34
	790577	Onions, red, raw	0.94	0.1	9.93
	1104962	Onions, white, raw	0.89	0.13	7.68
	790646	Onions, yellow, raw	0.83	0.05	8.61
ND00768		Apples, raw, without skin	0.27	0.13	12.76
	1750340	Apples, fuji, with skin, raw	0.15	0.16	15.6
	1750341	Apples, gala, with skin, raw	0.13	0.16	14.8
	1750343	Apples, honeycrisp, with skin, raw	0.1	0.1	14.7
	1750342	Apples, Granny smith, with skin, raw	0.27	0.14	14.1
	1750339	Apples, red delicious, with skin, raw	0.19	0.21	14.8
ND00773		Avocados, raw, California	1.96	15.41	8.64
	NA		#N/A	#N/A	#N/A
ND01497		Spices, garlic powder	16.55	0.73	72.73
	NA		#N/A	#N/A	#N/A
ND00772		Avocados, raw, all commercial varieties	2	14.66	8.53
	NA		#N/A	#N/A	#N/A
ND01693		Peppers, sweet, green, raw	0.86	0.17	4.64
	NA		#N/A	#N/A	#N/A
ND00428		Egg, white, raw, fresh	10.9	0.17	1.7175
	747997	Eggs, Grade A, Large, egg white	10.7	0.08	2.36
	748967	Eggs, Grade A, Large, egg whole	12.4	9.96	0.96
	748236	Eggs, Grade A, Large, egg yolk	16.2	28.8	1.02

Discussion

Many differences in carbohydrate values between Foundation Foods and SR Legacy can be traced to differences in the type of product obtained across the two databases. Most of the items had no exact match. Take apples, for example. In the SR Legacy, the item is titled "Apples, raw, without skin." There are 5 types of apples in Foundation Foods, all of which have skin, adding carbohydrates. Because Foundation Foods offers more specificity, it should be used in PKT when possible. The increased precision will allow the lab to better meet the specific needs of patients.

Future Implications

Moving forward, we hope to be able to work with the USDA to obtain Foundation Foods data for high priority items as soon as it becomes available. We also plan to further investigate differences in individual samples of foods in the Foundation Foods database to better understand the stability of nutrition values within a single item.