

Ketogenic Therapy Ratio and Brand Specific Foods

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Rationale: Ketogenic therapy for Per Os and tube fed patients is usually dosed according to the keto ratio (KR) based on the grams of macronutrients in the diet. In the United States, KR is usually defined as (grams of fat)/(grams of protein + grams of carbohydrate). Many ketogenic therapy recipes do not specify brands of food purchased at a food store or details of the ketogenic formula provided for tube feeding. Precision Ketogenic Therapy recipes use brand specific foods and patient families want to know if using different brands in a recipe makes a difference.

Methods: College students were provided a recipe for either oral or g-tube intake. They visited local food stores and took pictures of the labels of the foods they would buy if they were preparing the recipe for a Per Os patient. They visited the websites of the manufacturers of medical foods for ketogenic therapy that they would obtain if preparing the recipe for a patient with a g-tube. Data were collected from the nutrition facts label on the product and entered in a database. The KR ratio advertised on the label of the ketogenic formula was contrasted to the KR calculated using the values from the nutrition facts label on the product. The overall KRs of the same recipe using different brands of foods were calculated.

Results: Some brands of a food had the same nutrition facts values for all macronutrients, but some brands had different values. Carbohydrate was the most variable macronutrient among brands of food items. The KR values advertised were not the same as the calculated KR for any ketogenic formula. Ketogenic formulas with the same advertised KR did not have the same calculated KR. KRs of the meals using different brands of products for Per Os and tube feeding recipes were calculated as shown in the table below.

Conclusions: Changes in brands of food products can impact the KR or dose of the therapy. Patients using brands different than those used for recipe calculations may not be receiving the dose of therapy prescribed. Patients using different brands at different times may receive more changes in therapy than has been previously recognized. This data add to the concern in the literature that ketogenic diets are not defined adequately in research papers to be interpretable. "There remains an absence of a univocal definition of a ketogenic diet which continues to hinder research and clinical implementation of ketogenic for diabetes management." (1) and "...the current classification of diets results in terminological confusion" (2). The diet used must have a univocal definition including the KR definition.

References:

1. Firman, C. H., et al. (2023). "Does a Ketogenic Diet Have a Place Within Diabetes Clinical Practice? Review of Current Evidence and Controversies." *Diabetes Ther*: 1-21.
2. Zilberter, T. and Y. Zilberter (2018). "Ketogenic Ratio Determines Metabolic Effects of Macronutrients and Prevents Interpretive Bias." *Front Nutr* 5: 75.

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Effect of Brand Substitutions on PKT Ratio	
Recipe From Clinic • 24.2 g - Chicken Breast • 22.1 g - Avocado Oil • 67.7 g - Green Beans • 51.5 g - Whipping Cream • 60.6 g – Peaches PKT Ratio = 2.5:1	Recipe #1 • 24.2 g - Trader Joe's Boneless Skinless Breasts with Rib Meat • 22.1 g - 365 by Whole Foods Avocado Oil • 67.7 g - Great Value Cut Green Beans (Frozen) • 51.5 g - Publix Heavy Whipping Cream • 60.6 g – Del Monte Peach Halves in Heavy Syrup PKT Ratio = 1.3:1
Recipe #2 • 24.2 g - Publix All Natural Chicken Boneless Skinless Breasts with Rib Meat • 22.1 g - Publix Avocado Oil • 67.7 g - Trader Joe's Trimmed & Cleaned Green Beans • 51.5 g - Organic Valley Heavy Whipping Cream • 60.6 g – Great Value Sliced Peaches in 100% Fruit Juice PKT Ratio = 2.2:1	Recipe #3 • 24.2 g - Whole Foods Organic Chicken Breast Tenders • 22.1 g - Publix Avocado Oil • 67.7 g - Great Value Cut Green Beans (Canned) • 51.5 g - Organic Valley Heavy Whipping Cream • 60.6 g – Del Monte No Sugar Added Diced Peaches PKT Ratio = 3.6:1
Recipe From Clinic • 204.3 g – Keto Formula • 14.8 g - Olive Oil • 33.3g – Applesauce PKT Ratio = 2.5:1	Recipe with Formula #1 • 204.3 g – Vitaflo K.Flo • 14.8 g - Publix Extra Virgin Olive Oil • 33.3g – Great Value Unsweetened Apple Sauce PKT Ratio = 3.6:1
Recipe with Formula #2 • 204.3 g – KETO VIE 4:1 VANILLA • 14.8 g - Publix Extra Virgin Olive Oil • 33.3g – Great Value Unsweetened Apple Sauce PKT Ratio = 3:1	Recipe with Formula #4 • 204.3 g – Functional Formularies Ketogenic • 14.8 g - Publix Extra Virgin Olive Oil • 33.3g – Great Value Unsweetened Apple Sauce PKT Ratio = 1.9:1