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Medical Nutrition Therapy for Diabetes

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Medical Nutrition Therapy for Diabetes

Cheryl Marco, RD, CDE

Division of Endocrinology and
Metabolic Diseases

Thomas Jefferson University

The Cornerstone of Diabetes
Management is
Medical Nutrition Therapy

The role of the dietitian in Diabetes Management is to educate the patient about:

- The effect of food on blood glucose levels
- Meal planning for diabetes management
- Activity and blood glucose management
- Interrelationship of lifestyle and medication
- Modification of nutrient intake and lifestyle as appropriate for prevention and treatment of diabetes complications

Historical Overview of Calorie Distribution

	Carb	Protein	Fat
<1921	Starvation		
1921	20%	10%	70%
1950	40%	20%	40%
1971	45%	20%	35%
1986	50 to 60%	12 to 20%	30%

Current Recommendations for Diabetic Diet

- Non-prescriptive
- Individualized, based upon usual food intake, metabolic profile, treatment goals, and desired outcome

Nutrient Conversion to Glucose

- **Carbohydrate** – 100% in 15 to 120 minutes
- **Protein** – 58% in 3 to 5 hours, however with well controlled diabetes, protein does not increase plasma glucose concentration
- **Fat** - <10% in 6 to 10 hours; high fat meal will keep blood glucose levels elevated for a prolonged period of time however

Sources of Carbohydrate

- Starches – both refined and whole grain
- Legumes
- Fruit and fruit juice
- Milk and yogurt
- Sugar and sugar containing foods
- Vegetables

Types of Carbohydrate to Emphasize

- Vegetables
- Legumes
- 100% whole grains such as 100% whole wheat bread, whole wheat pasta, steel cut oats, quinoa, barley, buckwheat, bulgur wheat

Fiber

- Goal of 20 to 35 grams a day
- The fiber component of the total carbohydrate may not affect blood glucose

Sucrose

- Restriction not necessary
- Does not aggravate hyperglycemia more than other forms of refined carbohydrate
- Use within the context of a healthy diet

Nutrition Facts

Serving Size 1 Bar(50g)
Servings Per Container 6

Amount Per Serving

Calories 160

Calories from Fat 100

% Daily Value*

Total Fat 11g **17%**

Saturated Fat 8g **40%**

Cholesterol 10mg **3%**

Sodium 40mg **2%**

Total Carbohydrate 13g **4%**

Dietary Fiber 0g **0%**

Sugars 10g

Protein 2g

Vitamin A 6% • Vitamin C 0%

Calcium 6% • Iron 0%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

		Calories: 2,000	2,500
Total Fat	Less than	65g	80g
Sat. Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

ICE CREAM INGREDIENTS: MILKFAT AND NONFAT MILK, SUGAR, CORN SYRUP, VANILLA EXTRACT, CELLULOSE GUM AND GEL, MONO AND DIGLYCERIDES, GLUCERIN, POLYSORBATE 80, CARRAGEENAN, ANNATTO (COLOR). COATING INGREDIENTS: SWEET CHOCOLATE (SUGAR, CHOCOLATE, CHOCOLATE PROCESSED WITH ALKALI), NONFAT DRY MILK, LECITHIN, VANILLA, COCONUT OIL, PARTIALLY HYDROGENATED COCONUT OIL.

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GENUINE
ESKIMO PIE BRAND®
Original



Dark Chocolate Coating – Vanilla Ice Cream

6 BARS 2.5 FL OZ EA (74 mL EA) 15 FL OZ (444 mL)

5804
D403-2A1
MAD-8JF

6

Nutrition Facts

Serving Size 1 Bar (47g)
Servings Per Container 6

Amount Per Serving

Calories 120

Calories from Fat 70

	% Daily Value*
Total Fat 8g	13%
Saturated Fat 7g	34%
Cholesterol 10mg	3%
Sodium 40mg	2%
Total Carbohydrate 13g	4%
Dietary Fiber 0g	0%
Sugars 3g**	
Sugar Alcohols 2g	

Protein 3g

Vitamin A 4% • Vitamin C 0%

Calcium 8% • Iron 0%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat. Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

THIS PRODUCT CONTAINS NO SUGAR. FOR BEST QUALITY, PLEASE CONSUME BY THE BEST BEFORE DATE. THIS PRODUCT IS A PHENYLETHANOLAMINE. INGREDIENTS: MOYAL MILK AND A GREAT GOOD BUTTER OIL AND PARTIALLY HYDROGENATED COCONUT OIL. MAY CONTAIN POLYESTER, CRISPER, CRISPER, CRISPER, SALT, SORBITOL, CHOCOLATE FLAVOR, SODIUM, COCOA, CASHEW, VANILLA, SWEETENER, BUTTER, SALT, VANILLA, REDUCED FAT, MONO AND DIGLYCERIDES, POLYESTER, CARAGEENAN, MALTODEXTRIN, SODIUM PALMATE. TOTAL FAT 8g, SUGAR 3g, TOTAL CARBOHYDRATE 13g, DIETARY FIBER 0g, SUGAR ALCOHOLS 2g, SUGAR 3g.

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See side panel for
NO SUGAR ADDED
diabetic exchange
information

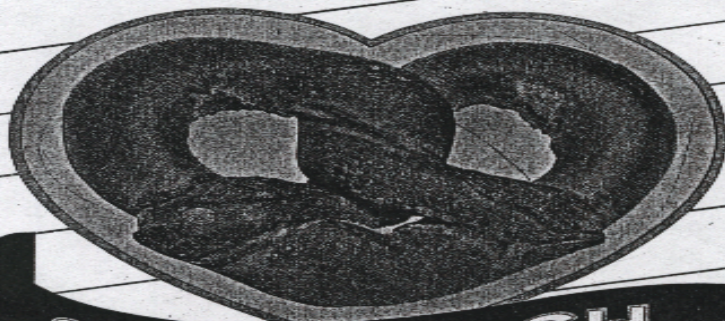
Reduced Fat Vanilla Ice Cream Bars Sweetened with Aspartame
Dipped in a Milk Chocolate Flavored Coating With Crisped Rice
Present
40% Less Fat and Calories than the leading ice cream bars. See top panel for Nutrition Information about Saturated Fat and other nutrients.

6

6 BARS 2.5 FL OZ (71 mL) 6 BARS 2.5 FL OZ (71 mL) 6 BARS 2.5 FL OZ (71 mL)



**SNYDER'S
OF HANOVER**



SOURDOUGH
Unsalted
Hard Pretzels

FAT FREE • CHOLESTEROL FREE SNACK

*Creative
Pretzel Eaters Club*

Folks just love to enjoy Snyder's Old Fashioned Sourdough Hard Pretzels in many taste-tempting ways.

What is your favorite way of enjoying our pretzels?

Write Snyder's Creative Pretzel Eaters Club, P.O. Box 917, Hanover, Pa. 17331, and tell us! We'll send you your own official Membership Card by return post.

**SNYDER'S
OF HANOVER**

SOURDOUGH
Unsalted
Hard Pretzels

Nutrition Facts

Serving Size 1 Pretzel (28g)
Servings Per Container about 15

Amount Per Serving		%Daily Value*
Calories 122		Calories from Fat 0
Total Fat 0g		0%
Saturated Fat 0g		0%
Cholesterol 0mg		0%
Sodium 89mg		4%
Total Carbohydrate 25g		8%
Dietary Fiber 1g		4%
Sugars Less than 3g		
Protein 3g		

Vitamin A 0% Vitamin C 0%
Calcium 0% Iron 2%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories 2,000	2,500
Total Fat	Less than 65g	80g
Sat Fat	Less than 20g	25g
Cholesterol	Less than 300mg	300mg
Sodium	Less than 2,400mg	2,400mg
Total Carbohydrate	300g	375g
Dietary Fiber	25g	30g

Calories per gram:
Fat 9 - Carbohydrate 4 - Protein 4

NOT A SODIUM FREE FOOD

INGREDIENTS: Unbleached Wheat Flour, Water, Yeast and Soda.

NO PRESERVATIVES
REG. PENNA. DEPT. AGR.

® PAREVE

Prepared by
SNYDER'S OF HANOVER, INC.
HANOVER, PENNSYLVANIA 17331, USA
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We are not connected in any way with "Snyder of Berlin", Berlin, PA 15530.

Net Carbohydrate

- Terminology not approved by the FDA
- Assumes fiber and polyols (sugar alcohols) have no glycemic effect; in fact there is a minimum of a 50% effect from polyols

Nutrition Facts

Serv Size 1 Bar (60g)

Amount Per Serving

Calories 250

Calories from Fat 110

% Daily Value*

Total Fat 12g 18%

Sat Fat 3.5g 18%

Cholest <5mg 1%

Sodium 210mg 9%

Total Carb 14g 5%

Fiber < 1g 4%

Sugars 1g

Protein 23g 33%

Vitamin A 30%

Vitamin C 30%

Calcium 45%

Iron 8%

Vitamin E 35%

Thiamin 30%

Riboflavin 30%

Niacin 35%

Vitamin B6 30%

Folic Acid 35%

Vitamin B12 30%

Biotin 30%

Pantothenic Acid 30%

Phosphorus 40%

Iodine 30%

Zinc 30%

Copper 35%

*Percent Daily Values are based on a 2,000 calorie diet.

3 NET CARBS

For those watching their carbs, count 3 grams. The remaining carbs have little effect on blood sugar.

IMPORTANT NOTE FOR LOW CARB DIETERS

GREAT NEW TASTE!

Carb Solutions™

High Protein Bar

NET WT 2.11 OZ (60 g)

For Low Carb Diets

3 NET CARBS

Taste Sensations!

Creamy Chocolate Peanut Butter

Naturally and Artificially Flavored



INGREDIENTS: PROTEIN BLEND (CALCIUM CASEINATE, SOY PROTEIN ISOLATE, HYDROLYZED COLLAGEN, WHEY PROTEIN ISOLATE), COATING (POLYDEXTROSE, FRACTIONATED PALM KERNEL OIL, NONFAT DRY MILK, COCOA, SOY LECTHIN, SALT, SUCRALOSE, NATURAL FLAVOR), GLYCERIN, HIGH OLEIC SUNFLOWER OIL, NATURAL AND ARTIFICIAL FLAVORS, WATER, PEANUT BUTTER (DRY ROASTED PEANUTS, SALT), DRY ROASTED PEANUTS, PEANUT FLOUR, VITAMIN AND MINERAL BLEND (DICALCIUM PHOSPHATE, ASCORBIC ACID, D-ALPHA-TOCOPHERYL ACETATE, NIACINAMIDE, ZINC OXIDE, COPPER GLUCONATE, CALCIUM D-PANTOTHENATE, RETINYL PALMITATE, THIAMIN MONONITRATE, PYRIDOXINE HYDROCHLORIDE, RIBOFLAVIN, FOLIC ACID, BIOTIN, POTASSIUM IODIDE, BETA-CAROTENE, CYANOCOBALAMIN), SALT, SUCRALOSE. **ALLERGEN INFORMATION: CONTAINS PEANUTS, SOY AND MILK INGREDIENTS. MAY CONTAIN TRACES OF OTHER NUTS AND SEEDS.**

RL2032-C988 1ZB



Boysen Patent, FL 32487 USA

Educational Goals Regarding Carbohydrate Intake

- Eat less carbohydrate at one time
- Use results of blood glucose self monitoring
- Emphasize slower acting forms of carbohydrate (concept of glycemic index)
- Eat less carbohydrate at breakfast due to increased insulin resistance
- Adjust short acting insulin to match carbohydrate intake

Fox Trot

YOU'RE EATING
BOWLS OF SUGAR
FOR BREAKFAST??

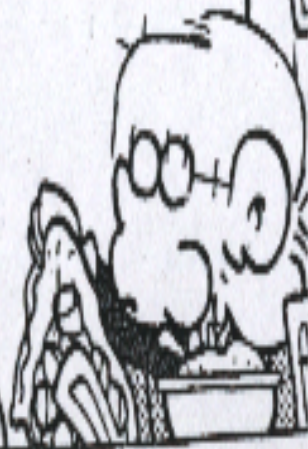
WE RAN OUT
OF CEREAL AND
THIS SEEMED
THE CLOSEST
SUBSTITUTE.

IF YOU USE
CHOCOLATE
MILK, YOU
CAN HARDLY
TELL.

CEREAL'S A
LITTLE
SWEETER,
I THINK.

PICKY,
PICKY.

HERE.
ADD SOME
MARSHMALLOWS.



Sources of Protein

- Meat – beef, pork, lamb, etc.
- Poultry
- Fish and shellfish
- Eggs
- Cheese
- Soy products

Educational Goals Regarding Protein Intake

- Choose leaner sources most often due to increased risk for coronary artery disease
- Include protein with each meal to provide greater sustenance and to enable a decrease in carbohydrate intake
- There is no evidence to suggest that usual protein intake should be modified if renal function is normal

Sources of Dietary Fat

- Oil – all types
- Butter, margarine, mayonnaise
- Cream
- Salad dressings
- Olives and avocado
- Nuts and seeds (including nut butters)

Goals for Types of Dietary Fat

- **Saturated** - <7% of total calorie, about 15 grams
- **Trans fatty acids** – no recommendation, but minimal
- **Polyunsaturated** – up to 10% of total calories
- **Monounsaturated** – at least 10% of total calories

Sources of Monounsaturated Fat

- Olives and olive oil
- Canola oil
- Avocado
- Most nuts and natural nut butters

Educational Goals Regarding Fat Intake

- Limit saturated and trans fats
- Moderate intake of polyunsaturated fats
- Increase intake of monounsaturated fats
- Fat is fattening! If weight is an issue, be aware of the role of fat.

Overall Balance

What will raise blood glucose?

- food
- stress

What will lower blood glucose?

- activity
- medication