US005470839A

United States Patent [19]

Laughlin et al.

[11] **Patent Number: 5,470,839**

[45] **Date of Patent: Nov. 28, 1995**

[54] **ENTERAL DIET AND METHOD FOR PROVIDING NUTRITION TO A DIABETIC**

[75] Inventors: **Philip Laughlin**, Winnetka; **John Alexander**, Kenilworth; **A. Reza Kamarei**, Wilmette; **Robert P. Dobbie**, Lincolnshire, all of Ill.; **Paul Lin**, Fullerton, Calif.; **Shen-Youn Chang**, Wadsworth, Ill.; **Sekhar Reddy**, New Milford, Conn.; **Etienne Grasset**, Boulogne-Billancourt, France; **Christian Melin**, Winnetka, Ill.

[73] Assignee: **Clintec Nutrition Company**, Deerfield, Ill.

[21] Appl. No.: **271,114**

[22] Filed: **Jul. 6, 1994**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 51,632, Apr. 22, 1993, abandoned.

[51] **Int. Cl.**[6] **A61K 31/00**

[52] **U.S. Cl.** **514/53**; 426/810; 514/552; 514/866

[58] **Field of Search** 514/53, 552, 866; 426/810

[56] **References Cited**

U.S. PATENT DOCUMENTS

962,753	6/1910	Fischer et al.	530/366
1,027,844	5/1912	Hoering	514/866
2,194,188	3/1940	Supplee	167/81
2,937,974	5/1960	Ferguson, Jr.	167/58
3,698,912	10/1972	Winitz	426/810
3,699,219	10/1972	Carlson, Jr.	424/442
3,873,720	3/1975	Suzuki et al.	424/442
3,920,838	11/1975	Flatt et al.	424/319
4,053,589	10/1977	Gans et al.	424/319
4,202,888	5/1980	Eckert et al.	536/7
4,407,821	10/1983	Mendy	424/312
4,438,144	3/1984	Blackburn	424/319
4,497,800	2/1985	Larson et al.	426/74
4,528,197	7/1985	Blackburn	514/552
4,604,286	8/1986	Kawajiri	514/23
4,670,261	6/1987	Samejima et al.	514/23
4,670,286	6/1987	Mahmoud	426/72
4,678,807	7/1987	Cotter et al.	514/552
4,687,782	8/1987	Brantman	426/810
4,690,820	9/1987	Simko	426/810
4,703,062	10/1987	Blackburn et al.	514/552
4,711,953	12/1987	Roger et al.	530/366
4,753,963	6/1988	Jandacek et al.	514/552
4,810,726	3/1989	Bistrian et al.	514/552
4,847,296	7/1989	Babayan et al.	514/552
4,871,768	10/1989	Bistrian et al.	514/547
4,906,664	3/1990	Bistrian et al.	514/552
4,921,877	5/1990	Cashmere et al.	514/866
5,116,189	11/1992	Trimbo et al.	514/2
5,116,819	5/1992	Trimbo et al.	514/21
5,231,085	7/1993	Alexander et al.	514/49
5,292,723	3/1994	Audry et al.	514/23

FOREIGN PATENT DOCUMENTS

189160	7/1986	European Pat. Off. .
246747	11/1987	European Pat. Off. .
265772	5/1988	European Pat. Off. .
WO86/07262	12/1986	WIPO .

OTHER PUBLICATIONS

Bach et al., "Medium–Chain Triglycerides: An Update", *The American Journal of Clinical Nutrition,* vol. 36: Nov. 1982, pp. 950–962.

Vigen K. Babayan, "Speciality Lipids and Their Biofunctionality", *Lipids,* vol. 22, No. 6, 1987, pp. 417–420.

M. Wicklmayr et al., "Comparison of Metabolic Clearance Rates of MCT/LCT and LCT Emulsions of Diabetics", *Journal of Parenteral and Enteral Nutrition,* vol. 2, No. 1, 1988, pp. 68–71.

Sachiko Takase et al., "Possible Role of Insulin Status in the Increased Lipogenic Enzyme Activity by Dietary Medium–Chain Triglyceride in Rat Liver", *J. Nutr. Sci.* Vitaminol., vol. 33, 1987, pp. 177–184.

Mitsuyoshi, "Effect of Medium–Chain Triglycerides (MCT) as an Energy Substrate After Hepatectomy in Rats with Streptozotocin–Induced Diabetes", *Res. Exp. Med.,* vol. 190, 1990, pp. 153–162.

Eric P. Bass, "Urinary Organic Acid Excretion During Feeding of Medium–Chain or Long–Chain Triglyceride Diets in Patients with Non–Insulin–Dependent Diabetes Mellictus", *Am. J. Clin. Nutr.,* vol. 52, 1990, pp. 923–926.

Robert H. Eckel et al., "Dietary Substitution of Medium–Chain Triglycerides Improves Insulin–Mediated Glucose Metabolism in NIDDM Subjects", *Diabetes,* vol. 41, May 1992, pp. 641–647.

Kathy Traianedes et al., "A High–Fat Diet Worsens Metabolic Control in Streptozotocin–Treated Rats by Increasing Hepatic Glucose Production", *Metabolism* vol. 41, No. 8, Aug. 1992, pp. 846–850.

Anderson, J. W. et al. "Dietary Fiber and Diabetes: A Comprehensive Review and Practical Application" in *Journal of the American Medical Association,* Sep. 1987, vol. 87, No. 9, pp. 1189–1197.

Anderson, J. W. "Fiber and Health: An Overview" in *Nutrition Today,* Nov./Dec. 1986, pp. 22–26.

Anderson, J. W. et al. "Metabolic Effects of High–Carbohydrate, High–Fiber Diets for Insulin–Dependent Diabetic Individuals" in *Am J Clin Nutr,* 1991, pp. 936–943.

(List continued on next page.)

Primary Examiner—Ronald W. Griffin
Attorney, Agent, or Firm—Hill, Steadman & Simpson

[57] **ABSTRACT**

A composition and method for providing nutrition, or a nutritional supplement, to a diabetic patient. Pursuant to the present invention, a low carbohydrate, high fat enteral formulation is provided. The fat comprises, in part, medium chain triglycerides (MCTs). Preferably, the composition includes a high percent of mono-unsaturated fats, high amylose starch, and soluble dietary fiber.

20 Claims, No Drawings