[0007] In addition to pharmaceutical therapies, as mentioned above, major effort has been made in understanding the effective preventative management of both prediabetes and diabetes through exercise and nutritional intervention. Preventative strategies for the management of diabetes progression, for example the progression from prediabetes to diabetes, or the progression from gestational diabetes to type 2 diabetes following pregnancy, should focus on improving insulin secretion and action, minimizing the factors associated with diabetes, especially insulin resistance, preventing hyperglycemia, and reestablishing muscle structure and functions.

[0008] Accordingly, methods of improving insulin secretion and production are desirable, particularly for patients suffering from diabetes or prediabetes. It is also desirable to provide methods of improving insulin secretion and production that help to delay progression of, prevent or reverse type 2 diabetes or prediabetes. A nutritional intervention that can help address the above limitations associated with existing diabetes treatments is also desirable.

SUMMARY OF THE INVENTION

[0008a] In one aspect, the invention is directed to the use of a nutritional composition in the manufacture of a medicament for improving insulin production and/or improving insulin secretion in a subject in need thereof, wherein the nutritional composition comprises lysine, arginine, and beta-hydroxy-beta-methylbutyrate (HMB) and the medicament is to be administered to the subject.

[0008b] In another aspect, the invention is directed to a nutritional composition comprising about 0.01 to about 15 wt % HMB, about 0.03 to about 40 wt % lysine, and about 0.02 to about 30 wt % arginine, all based on the weight of the nutritional composition.

[0009] In one embodiment, the invention is directed to a method of improving insulin production in a subject in need thereof, comprising administering a nutritional composition comprising lysine, arginine, and beta-hydroxy-beta-methylbutyrate (HMB) to the subject.

[0010] In an additional embodiment, the present invention is directed to a method of improving insulin secretion in a subject in need thereof, comprising administering a nutritional composition comprising lysine, arginine, and HMB to the subject.

[0011] In a further additional embodiment, the present invention is directed to a nutritional composition comprising about 0.01 to about 15 wt % of HMB, about 0.03 to about 40 wt % of lysine, and about 0.02 to about 30 wt % of arginine.

[0012] The methods of improving insulin production and improving insulin secretion, as well as the nutritional compositions according to the present invention, are advantageous in that they improve insulin secretion and insulin production and thus may contribute to reduced β-cell