SUMMARY

[0010] In one aspect, the present disclosure provides a use of a β-hydroxy-β-methylbutyrate (HMB) and at least one olive polyphenol in the manufacture of a medicament for maintaining skeletal muscle mobility and/or mass, and/or for recovery of skeletal muscle strength in an individual in need thereof.

[0010a] In another aspect, the present disclosure provides a non-therapeutic method for maintaining skeletal muscle mobility and/or mass, and/or for recovery of skeletal muscle strength in an individual in need thereof, comprising a nutritional composition comprising β-hydroxy-β-methylbutyrate (HMB) and at least one olive polyphenol to be administered to the individual.

[0010b] It is therefore an object of the disclosure to provide a convenient means for maintaining skeletal muscle mobility and/or mass, and/or for recovery of skeletal muscle strength in an individual in need thereof.

[0011] In one example, the disclosure is directed to a method for maintaining skeletal muscle mobility and/or mass, and/or for recovery of skeletal muscle strength in an individual in need thereof, comprising administering β-hydroxy-β-methylbutyrate (HMB) and at least one olive polyphenol to the individual.

[0012] In another example, the disclosure is directed to a nutritional composition for maintaining skeletal muscle mobility and/or mass, and/or for recovery of skeletal muscle strength in an individual in need thereof comprising HMB, at least one olive polyphenol, and at least one of: at least one source of protein, at least one source of fat, at least one source of carbohydrate.

[0013] The methods for maintaining skeletal muscle mobility and/or mass, and/or for recovery of skeletal muscle strength, as well as the nutritional compositions according to the present disclosure, are advantageous in that they, for example, maintain skeletal muscle mobility and/or mass, and/or stimulate recovery of skeletal muscle strength in a convenient manner. These and additional objects and advantages of the disclosure will be more fully apparent in view of the following detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The drawings are illustrative of certain embodiments of the invention and are exemplary in nature and are not intended to limit the invention defined by the claims, wherein:

[0015] **FIG. 1** illustrates a flow diagram for studying body weight and grip strength in relation to nutritional intervention in an animal model as described in Example 1.

Claims

What is claimed is:

1. Use of a β-hydroxy-β-methylbutyrate (HMB) and at least one olive polyphenol in the manufacture of a medicament for maintaining skeletal muscle mobility and/or mass, and/or for recovery of skeletal muscle strength in an individual in need thereof.

2. A non-therapeutic method for maintaining skeletal muscle mobility and/or mass, and/or for recovery of skeletal muscle strength in an individual in need thereof, comprising a nutritional composition comprising β-hydroxy-β-methylbutyrate (HMB) and at least one olive polyphenol to be administered to the individual.

3. The use or method of any one of claims 1 or 2, wherein the at least one olive polyphenol comprises hydroxytyrosol.

4. The use or method of any one of claims 1 to 3, wherein the individual has or is at risk of losing muscle mass, optionally wherein the reduced muscle mass or risk thereof is associated with aging, sarcopenia, hospitalization, immobilization, acquired immunodeficiency syndrome (AIDS), diabetes, cancer, chronic obstructive pulmonary disease (COPD), burn injury, nonalcoholic fatty liver disease (NAFLD), long term steroid use, inflammatory bowel disease (IBD), Crohn's disease, malnutrition, and/or an acute or chronic condition with a hypercatabolic state.

5. The use or method of any one of claims 1 to 3, wherein the individual has or is at risk of losing muscle strength, optionally wherein the reduced muscle strength or risk thereof is associated with inflammation, oxidative stress, immobilization, sepsis, infection, surgery,

cancer, COPD, obesity, diabetes, cardiovascular disease, dementia, aging, sarcopenia, malnutrition, and/or an acute or chronic condition with a systemic pro-inflammatory state.

6. The use or method of any one of claims 1 to 5, wherein the HMB is to be administered to the individual in an amount of 0.01 to 10 g/day, 0.1 to 10 g/day, or 0.1 to 6 g/day.

7. The use or method of any one of claims 1 to 6, wherein the at least one olive polyphenol, or more specifically, hydroxytyrosol is to be administered to the individual in an amount of 0.5 to 50 mg/day, 1 to 20 mg/day, or 5 to 15 mg/day.

8. The use or method of any one of claims 1-7, wherein the medicament or nutritional composition comprises 0.01 to 10 wt %, 0.1 to 10 wt %, 0.1 to 5 wt %, 0.1 to 3 wt %, 0.1 to 2 wt %, or 0.1 to 1.5 wt % of HMB.

9. The use or method of any one of claims 1-8, wherein the HMB is selected from the group consisting of alkali metal HMB, alkaline earth metal HMB, HMB free acid, HMB lactone and combinations of two or more thereof, optionally wherein the HMB is selected from the group consisting of sodium HMB, potassium HMB, magnesium HMB, chromium HMB, calcium HMB and combinations of two or more thereof.

10. The use or method of any one of claims 1-9, wherein the medicament or nutritional composition comprises 0.001 to 1 wt %, 0.005 to 0.5 wt %, 0.005 to 0.25 wt %, 0.008 to 0.1 wt %, 0.01 to 0.02 wt %, or 0.008 to 0.025 wt % of at least one olive polyphenol, optionally wherein the at least one olive polyphenol is hydroxytyrosol.

11. The use or method of any one of claims 1-10, wherein the medicament or nutritional composition comprises protein comprising whey protein concentrate, whey protein isolate, whey protein hydrolysate, acid casein, sodium caseinate, calcium caseinate, potassium caseinate, casein hydrolysate, milk protein concentrate, organic milk protein concentrate, milk protein isolate, milk protein hydrolysate, nonfat dry milk, condensed skim milk, soy protein concentrate, isolated soy protein, soy protein hydrolysate, pea protein concentrate, pea protein isolate, pea protein hydrolysate, collagen protein, collagen protein isolate, L-Carnitine, taurine, lutein, rice protein concentrate, rice protein isolate, rice protein hydrolysate, fava bean protein concentrate, fava bean protein isolate, fava bean protein hydrolysate, meat protein, potato protein, chickpea protein, canola protein, mung protein, guinea protein, amaranth protein, chia protein, hemp protein, flax seed protein, earthworm protein, insect protein, one or more amino acids and/or metabolites thereof, or a combination of two or more thereof.

12. The use or method of any one of any one of claims 1-11, wherein the medicament or nutritional composition comprises fat comprising coconut oil, fractionated coconut oil, soy oil, soy lecithin, corn oil, safflower oil, high oleic sunflower oil, palm olein, canola oil monoglycerides, lecithin, medium chain triglycerides, linoleic acid, alpha-linolenic acid, arachidonic acid, eicosapentaenoic acid, docosahexaenoic acid, high gamma linolenic (GLA) safflower oil, palm oil, palm kernel oil, canola oil, marine oil, fish oil, algal oil, borage oil, cottonseed oil, fungal oil, interesterified oils, transesterified oils, structured lipid, or a combination of two or more thereof.

13. The use or method of any one of claims 1-12, wherein the medicament or nutritional composition comprises carbohydrate comprising fiber, human milk oligosaccharide (HMO), maltodextrin, corn maltodextrin, organic corn, corn syrup, sucralose, cellulose

gel, cellulose gum, gellan gum, inositol, carrageenan, fructooligosaccharide, hydrolyzed starch, glucose polymer, corn syrup solid, rice-derived carbohydrate, sucrose, glucose, lactose, honey, sugar alcohol, isomaltulose, sucromalt, pullulan, potato starch, galactooligosaccharide, oat fiber, soy fiber, corn fiber, gum arable, sodium carboxymethylcellulose, methylcellulose, guar gum, locust bean gum, konjac flour, hydroxypropyl methylcellulose, tragacanth gum, karaya gum, gum acacia, chitosan, arabinoglactin, glucomannan, xanthan gum, alginate, pectin, low methoxy pectin, high methoxy pectin, cereal beta-glucan, psyllium, inulin, cornstarch, or a combination of two or more thereof.

14. The use or method of any one of claims 1-13, wherein the medicament or nutritional composition comprises from 1 to 30 wt % of protein, from 0.1 to 30 wt % fat, and from 0.5 to 70 wt % carbohydrate.

15. The use or method of any one of claims 1-13, wherein the medicament or nutritional composition comprises from 10 to 70 wt % protein and from 10 to 40 wt % carbohydrate.

16. The use or method of any one of claims 1-15, wherein maintaining skeletal muscle mobility and/or mass and/or recovery of skeletal muscle strength involves mitigating muscle protein degradation, promoting muscle protein synthesis, or a combination thereof.