and the effective dosage of the *Pediococcus pentosaceus* GKP4 for an adult human can be 240 mg/60 kg body weight (bw)/day to 4,800 mg/60 kg bw/day, for example.

[0008] The other aspect of the present invention is to provide a use of *Pediococcus pentosaceus* GKP4 in the manufacture of a medicament of improving sarcopenia, in which the medicament can include but not limited to an effective dosage of *Pediococcus pentosaceus* GKP4 as an active ingredient, and the effective dosage of the *Pediococcus pentosaceus* GKP4 for a mouse can be 50 mg/kg bw/day to 1,000 mg/kg bw/day, for example.

[0009] A further aspect of the present invention is to provide a use of *Pediococcus pentosaceus* GKP4 in the manufacture of a medicament of improving sarcopenia, in which the medicament can include but not limited to an effective dosage of a lyophilized powder of the *Pediococcus pentosaceus* GKP4 as an active ingredient, and the medicament is to be administered daily to a sarcopenia subject for at least 14 days.

[0010] According to the aforementioned aspects of the present invention, a use of *Pediococcus pentosaceus* GKP4 for preparing a medicament of improving sarcopenia is provided. The medicament can include but not limited to an effective dosage of the *Pediococcus pentosaceus* GKP4 as an active ingredient, and the medicament is to be administered daily to a subject for a period of time. The *Pediococcus pentosaceus* GKP4 can be deposited on November 6, 2020 at NITE Patent Microorganisms Depositary of National Institute of Technology and Evaluation (NITE) with an accession number NITE BP-03317, for example. In one embodiment of the present invention, the

period of time can be at least 14 days, for example. In one embodiment of the present invention, the *Pediococcus pentosaceus* GKP4 improves sarcopenia by relieving muscle loss.

[0011] According to another aspect of the present invention, the medicament can include but not limited to an effective dosage of *Pediococcus pentosaceus* GKP4 as an active ingredient, in which an accession number of *Pediococcus pentosaceus* GKP4 can be NITE BP-03317, and the effective dosage of the *Pediococcus pentosaceus* GKP4 for an adult human can be 240 mg/60 kg bw/day to 4,800 mg/60 kg bw/day/day, or example. In one embodiment of the present invention, the sarcopenia can be an acute sarcopenia, for example. According to the other aspect of the present invention, the medicament can include but not limited to an effective dosage of *Pediococcus pentosaceus* GKP4 as an active ingredient, in which an accession number of *Pediococcus pentosaceus* GKP4 can be NITE BP-03317, and the effective dosage of the *Pediococcus pentosaceus* GKP4 for a mouse can be 50 mg/kg bw/day to 1,000 mg/kg bw/day, for example. In one embodiment of the present invention, the sarcopenia can be an acute sarcopenia, for example.

[0012] According to a further aspect of the present invention, a use of *Pediococcus pentosaceus* GKP4 in the manufacture of a medicament of improving sarcopenia is provided. The medicament can include but not limited to an effective dosage of a lyophilized powder of the *Pediococcus pentosaceus* GKP4 as an active ingredient, and accession number of *Pediococcus pentosaceus* GKP4 is NITE BP-03317. The medicament is to be administered daily to a sarcopenia subject for at least 14 days.

food or pharmaceutically acceptable carriers, excipients, diluents, adjuvants and/or additives, which can be a solvent, an emulsifying agent, a suspending agent, a disintegrating agent, a binding agent, a stabilizing agent, a chelating agent, a diluent, a gelling agent, a preservative, a lubricant and/or an absorption retardant and the like, for example.

[0025] No limitation is on the administration amount and administration times of the GKP4 medicament as long as the effective dosage of *Pediococcus pentosaceus* GKP4 is reached. In one embodiment, the effective dosage of *Pediococcus pentosaceus* GKP4 for a mouse can be 50 mg/kg bw/day to 1,000 mg/kg bw/day, for example. In a specific example, the effective dosage of *Pediococcus pentosaceus* GKP4 for a mouse is 500 mg/kg bw/day. In one embodiment, the effective dosage of *Pediococcus pentosaceus* GKP4 for an adult human can be 240 mg/60 kg bw/day to 4,800 mg/60 kg bw/day/day, for example. If the effective dosage of *Pediococcus pentosaceus* GKP4 is lower than the aforementioned range, the GKP4 medicament could hardly improve sarcopenia. However, if the effective dosage of *Pediococcus pentosaceus* GKP4 is higher than the aforementioned range, the effect of the medicament on improving sarcopenia can not get better, but the manufacturing cost of the medicament will increase.

[0026] The conversion of the effective dosage for mouse and adult human can be estimated according to an estimation method for initial trials (Estimating the maximum safe starting dose in initial clinical trials for therapeutics in adult healthy volunteers) announced by the Food and Drug Administration on 2005, in which 12.3-fold of the recommended intake amount per kilogram body weight

WHAT IS CLAIMED IS:

1. Use of *Pediococcus pentosaceus* GKP4 in the manufacture of a medicament of improving sarcopenia, wherein the medicament comprises an effective dosage of the *Pediococcus pentosaceus* GKP4 as an active ingredient, the medicament is to be administered daily to a subject for at least 14 days, and the *Pediococcus pentosaceus* GKP4 is deposited on November 6, 2020 at NITE Patent Microorganisms Depositary of National Institute of Technology and Evaluation (NITE) with an accession number NITE BP-03317.

2. The use according to claim 1, wherein the sarcopenia is an acute sarcopenia.

3. The use according to claim 1, wherein the *Pediococcus pentosaceus* GKP4 improves the sarcopenia by relieving muscle loss.

4. Use of *Pediococcus pentosaceus* GKP4 in the manufacture of a medicament of improving sarcopenia, wherein the medicament comprises an effective dosage of the *Pediococcus pentosaceus* GKP4 as an active ingredient, an accession number of *Pediococcus pentosaceus* GKP4 is NITE BP-03317, the medicament is to be administered daily to a subject for at least 14 days, and the effective dosage of the *Pediococcus pentosaceus* GKP4 for an adult human is 240 mg/60 kg body weight (bw)/day to 4,800 mg/60 kg bw/day.

5. The use according to claim 4, wherein the sarcopenia is an acute sarcopenia.

6. Use of *Pediococcus pentosaceus* GKP4 in the manufacture of a medicament of improving sarcopenia, wherein the medicament comprises an effective dosage of the *Pediococcus pentosaceus* GKP4 as an active ingredient, an accession number of *Pediococcus pentosaceus* GKP4 is NITE BP-03317,

the medicament is to be administered daily to a subject for at least 14 days, and the effective dosage of the *Pediococcus pentosaceus* GKP4 for a mouse is 50 mg/kg bw/day to 1,000 mg/kg bw/day.

7. The use according to claim 6, wherein the sarcopenia is acute sarcopenia.

8. Use of *Pediococcus pentosaceus* GKP4 in the manufacture of a medicament of improving sarcopenia, wherein the medicament comprises an effective dosage of a lyophilized powder of the *Pediococcus pentosaceus* GKP4 as an active ingredient, an accession number of *Pediococcus pentosaceus* GKP4 is NITE BP-03317, and the medicament is to be administered daily to a sarcopenia subject for at least 14 days.

9. The use according to claim 8, wherein the *Pediococcus pentosaceus* GKP4 improves the sarcopenia by relieving a muscle loss of the sarcopenia subject.

10. The use according to claim 8, wherein the *Pediococcus pentosaceus* GKP4 improves the sarcopenia by increasing a muscle strength of the sarcopenia subject.

11. The use according to claim 8, wherein the *Pediococcus pentosaceus* GKP4 improves the sarcopenia by increasing a muscle endurance of the sarcopenia subject.