WHAT IS CLAIMED IS:

1. Use of a mycelium of *Phellinus linteus* GKPI in the manufacture of a medicament for treating obesity, wherein the medicament comprises an effective dose of an extract of the mycelium of the *Phellinus linteus* GKPI as an active ingredient, and the *Phellinus linteus* GKPI is deposited in NITE Patent Microorganisms Depositary of the National Institute of Technology and Evaluation (NITE) on November 12, 2020 with the accession number of NITE BP-03321, and the extract of the mycelium of the *Phellinus linteus* GKPI treats obesity by increasing expression levels of peroxisome proliferator-activated receptor gamma coactivator (PGC)-1α, fibronectin type III domain-containing protein (FNDC) 5 and uncoupling protein (UCP) 1.

2. The use according to claim 1, wherein the extract comprises a hot-water extract of the mycelium of the *Phellinus linteus* GKPI and/or an ethanol extract of the mycelium of the *Phellinus linteus* GKPI.

3. The use according to claim 1, wherein the mycelium of the *Phellinus linteus* GKPI is obtained by subjecting the *Phellinus linteus* GKPI to a multistep incubation treatment comprising a solid-state incubation step, a liquid-state incubation step and a fermentation step ~~effective dose of the extract is 150 μg/mL to 250 μg/mL *in vitro*~~.

4. The use according to claim ~~1~~3, wherein the solid-state incubation step is performed by incubating the *Phellinus linteus* GKPI with a solid-state medium under 15°C to 30°C for 7 days to 14 days, so as to obtain a first culture ~~*Phellinus linteus* GKPI treats the obesity by increasing an expression level of peroxisome proliferator-activated receptor gamma coactivator (PGC)-1α~~.

5. The use according to claim 4, wherein the liquid-state incubation step is performed by incubating the first culture with a liquid-state medium under 15°C to 30°C, pH 2 to pH 6 and a rotation speed of 110 rpm to 130 rpm for 3 days to 21 days, so as to obtain a second culture ~~*Phellinus linteus* GKPI treats the obesity by increasing an expression level of fibronectin type III domain-containing protein (FNDC) 5~~.

6. The use according to claim 5, wherein the fermentation step is performed by incubating the second culture with a fermentation medium under 15°C to 30°C, pH 2 to pH 6 and a rotation speed of 110 rpm to 130 rpm for 3 days to 21 days, so as to obtain a fermented product of the mycelium of the *Phellinus linteus* GKPI ~~*Phellinus linteus* GKPI treats the obesity by increasing an expression level of uncoupling protein (UCP) 1~~.

7. Use of a mycelium of *Phellinus linteus* GKPI in the manufacture of a medicament for treating obesity, wherein the medicament comprises an effective dose of an hot-water extract of the mycelium of the *Phellinus linteus*

GKPI and/or an ethanol extract of the mycelium of the *Phellinus linteus* GKPI as an active ingredient, ~~and~~ the accession number of the *Phellinus linteus* GKPI is NITE BP-03321, and the mycelium of the *Phellinus linteus* GKPI treats obesity by increasing expression levels of PGC-1α, FNDC 5 and UCP 1.

8. The use according to claim 7, wherein the hot-water extract of the mycelium of the *Phellinus linteus* GKPI is obtained by subjecting the mycelium of the *Phellinus linteus* GKPI to a hot-water extract, and a volume ratio value of the mycelium of the *Phellinus linteus* GKPI to hot water of 100°C is 1/50 to 1/1 ~~the effective dose of the hot-water extract and/or the ethanol extract is 150 μg/mL to 250 μg/mL *in vitro*~~.

9. The use according to claim 7, wherein the ethanol extract of the mycelium of the *Phellinus linteus* GKPI is obtained by subjecting the mycelium of the *Phellinus linteus* GKPI to an ethanol extract, wherein a weight ratio value of the mycelium of the *Phellinus linteus* GKPI to ethanol is 1/50 to 1/1 ~~*Phellinus linteus* GKPI treats the obesity by increasing an expression level of PGC-1α~~.

10. The use according to claim 9, wherein the ethanol extract is performed with sonication ~~*Phellinus linteus* GKPI treats the obesity by increasing an expression level of FNDC5 and UCP1~~.

~~11. Use of a mycelium of *Phellinus linteus* GKPI in the manufacture of a medicament for treating obesity-related metabolic disorders, wherein the medicament comprises an effective dose of an extract of the mycelium of the *Phellinus linteus* GKPI as an active ingredient, the effective dose of the extract is 150 μg/mL to 250 μg/mL *in vitro*, and the accession number of the *Phellinus linteus* GKPI is NITE BP-03321 *in vitro*.~~

~~12. The use according to claim 11, wherein the extract comprises a hot-water extract of the mycelium of the *Phellinus linteus* GKPI and/or an ethanol extract of the mycelium of the *Phellinus linteus* GKPI.~~