Postbiotic Slimbac

Product Specification

swiss formula

Master Core Technology in manufacturing probiotics

Food Innovation Postbiotics

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Specification

【Name】

Product Name: SlimBac

Type: Postbiotics Dietary Supplement

【Main Ingredients】

L.gasseri HK-LG07,*L.mesenteroides* HK-MUM502,*L.cremoris* HK-LLC36,*L.helveticus* HK-LPH17.

【Health Claim】

Support weight control.

【Package Specification】

·High Potency Postbiotic Powder: 1/5/10kg per bag, 350 billion cells/g

【Storage and Shelf Life】

The High Potency Postbiotic Powder can be stored in a cool and dry place, the shelf life is 24 months.

【Direction】

Recommended daily intake and use in foods: 20 billion cells/day or per serving.

Maximum recommended dosage: 100 billion cells/day or per serving.

【Key Features】

· **Safety of Probiotic Strains:** All strains in this formula were clearly sourced and identified by 16S rRNA and whole genome sequencing, free from GMOs and non-hemolytic. Acute and 28-day oral toxicity tests in mice showed no adverse effects or deaths, with no significant differences in weight, organ indices, or blood biochemistry between the test and control groups. Overall, the strains are highly safe.

·**Scientific Evidence:** the product's efficacy has been validated through multiple testing paradigms for comprehensive mechanistic verification.

【Executive Standard】

Q/ZHS0004S-2024

【Food Production License】

SC10641018200810

【Distributed by Swiss Formula 】

Mechanism of Action

Overweight and obesity are defined as conditions characterized by abnormal or excessive fat accumulation resulting from an imbalance between energy intake, basal metabolism, and energy expenditure. The World Health Organization (WHO) defines overweight as a Body Mass Index (BMI) ranging from 25.0 to 29.9 kg/m², and obesity as a BMI of ≥30 kg/m². According to data from 2016, more than 1.9 billion adults (representing 39% of the global adult population) were classified as overweight, of which 650 million were obese (WHO, 2021).

Obesity represents a pathological condition that adversely affects mental health and daily functioning; in severe cases, it may lead to developmental delays. With societal advancement, the demand for weight control has extended beyond the obese population. A significant number of individuals, particularly women, increasingly prioritize body shape management and the pursuit of an ideal physique, utilizing exercise, dietary adjustments, and other interventions to regulate body composition.

As scientific research progresses, a growing body of literature highlights the critical role of gut microbiota in weight management, leading to the development of microbiome-based products. The mechanisms by which microorganisms regulate body weight are generally categorized as follows:

1. Modulation of gut microbiota composition and promotion of intestinal motility;
2. Regulation of the intestinal microenvironment to accelerate the kinetics of nutrient absorption and metabolism;
3. Secretion of bioactive metabolic byproducts that participate in lipid and glucose metabolic pathways.

Compared to conventional interventions such as exercise and dietary restrictions, probiotic modulation offers distinct advantages by alleviating the physical burden of rigorous activity and the challenges of strict dietary adherence. It achieves comprehensive weight management through the synergistic interaction of multiple internal physiological pathways. Furthermore, recent studies indicate that certain probiotic strains retain their weight management efficacy even after inactivation (heat-killing). Compared to live probiotics, these inactivated strains (postbiotics) possess superior stability against high-temperature processing environments and offer greater ease of transportation. These characteristics grant them significant potential

for practical application, allowing for the effective regulation of glucose and lipid metabolism to meet consumer demands for body shape management.

Efficacy Verification

1. Inhibition of Intracellular Lipid and Triglyceride Accumulation

Mouse embryonic fibroblasts (3T3-L1), which are capable of differentiating into adipocytes, were employed to evaluate the effects of postbiotics on lipid accumulation. The cells were treated with varying doses of SlimBac (10^7-10^9 cells/mL) four times, with a one-day interval between treatments. The results indicated that postbiotic treatment significantly reduced lipid and triglyceride contents in differentiated 3T3-L1 adipocytes.

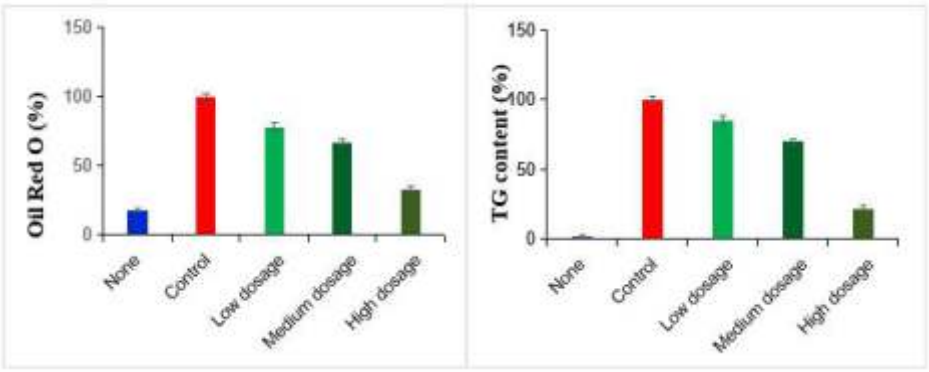

Figure 1. Effect of SlimBac on intracellular lipid and triglyceride accumulation

2. Animal Study

Mice were divided into three groups: a Normal Diet (ND) group (10 weeks), a High-Fat Diet (HFD) group (10 weeks), and an HFD + SlimBac group. In the treatment group, SlimBac (10^{10} cells/mouse) was administered daily via oral gavage for a total of 12 weeks, commencing 2 weeks prior to the initiation of the 10-week HFD. Results indicated that SlimBac treatment significantly reduced serum triglyceride levels and attenuated hepatic lipid accumulation compared to the untreated HFD group, as evidenced by reductions in liver mass and adipocyte size.

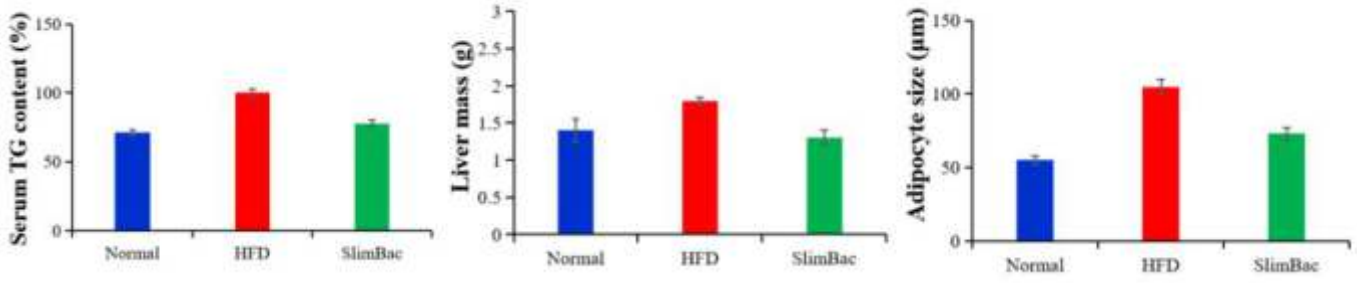

Figure 2. Effect of SlimBac on lipid metabolism and accumulation in HFD-induced obese mice

In addition, SlimBac intervention significantly reduced body weight in high-fat diet (HFD)-fed mice, showing its potential in weight control.

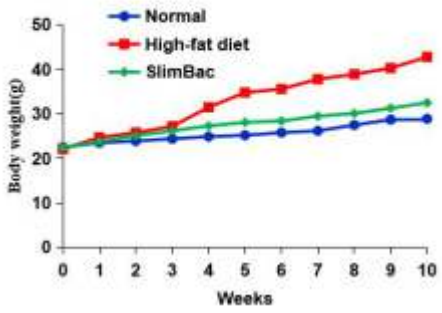

Figure 3. Effect of SlimBac on body weight

Thermal Stability

1. Thermal Stability of SlimBac Powder

The SlimBac powder (3.5×10^{11}cells/g) was stored at 4°C (Refrigerated), 25°C (Room Temperature), and 40°C (Accelerated). Total cell counts were enumerated on a bi-weekly basis by flow cytometry. The product demonstrated exceptional stability across all temperature ranges. Notably, under accelerated testing conditions (40°C) for 16 weeks, the postbiotic powder maintained a high cell count retention rate with no significant degradation.

Table 2. Stability of SlimBac powder at different temperatures (% intact cells)

Temperature	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks	14 weeks	16 weeks
4°C	99.80	99.71	99.37	99.30	98.75	98.44	98.37	98.01
25°C	99.45	99.18	99.08	98.50	98.27	97.62	97.25	96.70
40°C	99.26	98.45	98.10	97.50	96.69	96.40	95.25	93.45

Thermal Stability

2. Thermal Stability of SlimBac in Beverage

The SlimBac powder (1.0×10^{11}cells/g) was formulated into a lactic acid bacteria beverage to achieve a final concentration of 1.0×10^{10} cells per 200 mL bottle. Samples were stored at 4°C, 25°C, and 40°C, with cell counts enumerated bi-weekly. Results indicate that the postbiotics maintained high stability under accelerated testing conditions (40°C) over a 16-week period, demonstrating robust performance in beverage.

Table 3. Stability of SlimBac beverage at different temperatures (% intact cells)

Temperature	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks	14 weeks	16 weeks
4°C	99.23	98.35	97.64	96.71	96.14	95.06	94.45	92.15
25°C	99.02	98.14	97.37	96.05	94.38	92.76	91.86	89.75
40°C	98.35	96.84	94.38	92.19	90.66	87.38	85.25	84.39

3. Thermal Stability of SlimBac in Jelly

The SlimBac powder (3.5×10^{11}cells/g) was formulated into jelly to achieve a final concentration of 5.0×10^{8} cells per gram. Samples were stored at 4°C, 25°C, and 40°C, with cell counts enumerated bi-weekly. Results indicate that the postbiotic maintained high stability under accelerated testing conditions (40°C) over a 16-week period, demonstrating robust performance in jelly.

Table 4. Stability of SlimBac jelly at temperatures (% intact cells)

Temperature	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks	14 weeks	16 weeks
4°C	99.64	99.08	98.76	98.12	97.79	97.35	96.59	96.09
25°C	98.43	97.60	97.02	96.45	96.05	94.47	94.12	92.79
40°C	97.88	97.04	95.89	95.24	94.18	93.19	91.56	89.75

4. Processing Stability of SlimBac

The SlimBac powder (2.0×10^{11} cells/g) was subjected to thermal treatment at 80 and 100°C for varying durations. Subsequently, the number of intact cells was quantified. The results, as presented below, indicate that the product retained a high degree of cellular integrity under these conditions, demonstrating excellent tolerance to thermal processing.

Table 5. Stability of SlimBac at thermal processing (% intact cells)

Temperature	5 min	10 min	15 min	20 min	25 min	30 min
80°C	98.17	96.32	93.25	92.44	91.18	88.76
100°C	95.36	88.58	84.63	82.15	81.09	79.64

References

1. H&H Internal Laboratory Study: Weight Control Efficacy Evaluation Report of SlimBac.
2. H&H Internal Laboratory Study: Stability of SlimBac in Different Food application.