HOMOLOGY-OF-MEDICINE-AND-FOOD HEALTH PRODUCT CONTAINING BIOLOGICAL ENZYMES AND PREPARATION METHOD THEREOF

Technical Field

This invention relates to the field of health food technology, and more particularly to a homology-of-medicine-and-food health product containing biological enzymes and a preparation method thereof.

Background Art

Traditional food-medicine homology products (such as powders and capsules) focus on overall conditioning through the properties and meridian tropism of the ingredients themselves, but the solubility and bioavailability of their active ingredients are sometimes limited. On the other hand, most digestive enzyme preparations on the market are single or compound enzyme products, primarily functioning to aid digestion, lacking the systemic conditioning function guided by traditional Chinese medicine theory.

In the prior art, there are processes that use bio-enzymes to hydrolyze food-medicine homology raw materials to extract active ingredients, but the enzymes are consumed as processing tools in this process, and the final product contains little or no inactivated enzymes. Products that directly combine active bio-enzymes with food-medicine homology raw materials are rare. The main technical difficulties are: 1) Active bio-enzymes are sensitive to temperature, humidity, and pH, and are easily inactivated during preparation and storage; 2) Food-medicine homology raw materials have complex compositions and may contain substances that affect enzyme activity; 3) How to scientifically combine them so that the enzymes and food-medicine homology components synergistically enhance each other rather than interfere with each other.

Therefore, developing a health product that simultaneously retains the activity of biological enzymes, integrates traditional Chinese medicine dietary therapy theories, and possesses synergistic effects has significant market value and technological importance.

Summary of the Invention

The purpose of this invention is to overcome the shortcomings of existing technologies and provide a homology-of-medicine-and-food health product containing biological enzymes and a preparation method thereof. This product directly combines active biological enzymes with food and medicine ingredients, achieving better health benefits through a dual mechanism of "enzyme-assisted digestion and absorption, and dietary system regulation," while the preparation process maximizes the protection of enzyme activity.

The technical solution provided by the invention is:

A homology-of-medicine-and-food health product containing biological enzymes, characterized in that it is composed of raw materials in the following weight percentages:

20–40% of biological enzymes; 60–80% of a homology-of-medicine-and-food matrix; and 1–5% of a prebiotic.

Preferably, the homology-of-medicine-and-food matrix comprises the following components in parts by weight: 12–18 parts of yam powder, 10–15 parts of Poria cocos powder, 8–12 parts of hawthorn powder, 8–12 parts of Coix seed powder, 6–10 parts of goji berry powder, 4–8 parts of dried tangerine peel powder, 3–6 parts of ginger powder, and 2–5 parts of licorice powder.

Preferably, the biological enzymes comprise the following components in parts by weight: 6–10 parts of bromelain, 6–10 parts of papain, 4–8 parts of amylase, 2–6 parts of lipase, and 2–6 parts of cellulase.

Preferably, the prebiotic is at least one selected from fructo-oligosaccharides, galacto-oligosaccharides, and inulin.

The invention achieves the following beneficial effects:

Functional synergy: The invention creatively combines ingestible active digestive enzymes with homology-of-medicine-and-food raw materials. The biological enzymes can directly act on the gastrointestinal tract to efficiently decompose nutrients and may enhance the bioavailability of active substances contained in the homology-of-medicine-and-food components. Meanwhile, the

homology-of-medicine-and-food matrix (e.g., yam for strengthening the spleen, hawthorn for promoting digestion, and Poria cocos for removing dampness) provides systematic regulation of the digestive system and overall physiological functions from the perspective of traditional Chinese medicine. The combination achieves a complementary effect, integrating both symptomatic support (improved digestion) and root-level regulation (spleen and stomach conditioning).

Retention of enzyme activity: Through strictly controlled preparation conditions involving low temperature (<20°C), low humidity (<40% RH), and gentle mixing, together with subsequent vacuum or nitrogen-filled packaging, loss of enzyme activity during production is minimized, ensuring that the final product retains high enzymatic activity.

Scientific compatibility: Acid-resistant bromelain and broad-spectrum papain are selected to better adapt to the gastric environment. The formulation of the homology-of-medicine-and-food matrix follows the traditional Chinese medicine principle of "monarch-minister-assistant-courier," wherein yam and Poria cocos act as monarch components for spleen fortification, hawthorn and Coix seed act as minister components for aiding digestion and removing dampness, and goji berry, dried tangerine peel, and others serve as assistant and courier components to harmonize the formula. The added prebiotics help regulate the intestinal microbiota and, together with the digestive enzymes, contribute to a healthier intestinal environment.

Convenience and safety: The product is provided as a ready-to-use powder without requiring complicated enzymatic activation steps. It can be directly consumed by dissolving in warm water, offering good user experience and high safety.

Specific Embodiment of the Invention

The following describes the technical solutions of the embodiments of the invention in a clear and complete manner with reference to the embodiments.

Embodiment 1

A homology-of-medicine-and-food health product containing biological enzymes is provided. Based on 100 g of the product, the raw materials comprise:

Directly ingestible biological enzymes (30 g): 8 g of bromelain, 8 g of papain, 6

g of amylase, 4 g of lipase, and 4 g of cellulase.

Homology-of-medicine-and-food matrix (69 g): 15 g of yam powder, 12 g of Poria cocos powder, 10 g of hawthorn powder, 10 g of Coix seed powder, 8 g of goji berry powder, 6 g of dried tangerine peel powder, 4 g of ginger powder, 3 g of licorice powder, and 1 g of fructooligosaccharides.

Embodiment 2

Another homology-of-medicine-and-food health product containing biological enzymes is provided. Based on 100 g of the product, the raw materials comprise:

Directly ingestible biological enzymes (25 g): 7 g of bromelain, 7 g of papain, 5 g of amylase, 3 g of lipase, and 3 g of cellulase.

Homology-of-medicine-and-food matrix (75 g): 18 g of yam powder, 15 g of Poria cocos powder, 12 g of hawthorn powder, 9 g of Coix seed powder, 7 g of goji berry powder, 5 g of dried tangerine peel powder, 5 g of ginger powder, 3 g of licorice powder, and 1 g of fructooligosaccharides.

The preparation of Embodiment 1 and Embodiment 2 comprises the following steps:

S1. Raw material pretreatment: The raw materials of the homology-of-medicine-and-food matrix are individually washed and dried at a low temperature of 45–55℃ until the moisture content falls below 8%. The dried materials are then ultrafinely pulverized to more than 300 mesh to obtain respective matrix powders.

S2. Matrix premixing: The matrix powders obtained in Step S1 are uniformly mixed with the prebiotic under dry conditions to obtain a homology-of-medicine-and-food matrix mixture.

S3. Low-temperature enzyme addition: The matrix mixture is cooled to below 20℃. Under an environment in which the temperature is lower than 20℃ and the relative humidity is lower than 40%, cellulase, lipase and amylase are first added. After uniform mixing, bromelain and papain are subsequently added, followed by gentle mixing at a rotational speed of 20–50 rpm for 5–15 minutes.

S4. Homogenization and packaging: The final mixture obtained in Step S3 is sieved and homogenized, and then filled and sealed in a low-temperature and low-humidity environment using vacuum or nitrogen-filled aluminum foil packaging.

The finished products of Embodiment 1 and Embodiment 2 exhibit an enzyme-activity retention rate greater than 85%.

Comparative Effect

Adult volunteers were selected for a trial intake study. Each volunteer consumed 5 g of the product of Embodiment 1 after meals daily. Feedback after one week indicated that the volunteers showed significant improvement in postprandial distension and dyspepsia symptoms, demonstrating that the added directly ingestible biological enzymes provided rapid digestive assistance. After long-term intake (four weeks), the volunteers in the Embodiment 1 group also exhibited more pronounced improvements in overall energy status and bowel regularity.

The invention and its embodiments have been described above. This description is not restrictive, and the embodiments shown are only one of the embodiments of the invention. Actual implementation is not limited to this. In short, if those skilled in the art are inspired by this description and design similar embodiments without departing from the spirit of the invention, they should all fall within the protection scope of the invention.