Operational Guidelines for the Addition Method of Phycocyanin in Application Fields

1. General Provisions

1.1 Purpose

To standardize the **addition method**, operating procedures, dosage standards and quality control requirements of **phycocyanin** in various foods, health foods, feeds and pet foods; to avoid problems such as pigment degradation, activity attenuation, poor dispersion, graying and fading during production. It ensures stable color retention, active substance preservation and compliance of finished products, meets production demands for natural coloring, nutritional fortification and biological function upgrading, unifies standardized workshop operating procedures, and reduces production quality and formula risks.

1.2 Scope of Application

This guideline applies to food-grade phycocyanin purified and prepared from spirulina raw materials. It covers the full range of production and processing scenarios including beverages, dairy products, baked foods, meat products, candies and jellies, frozen foods, condiments, health foods, feeds and pet foods. It is available for production operators, R&D technicians, quality inspectors and post standardization training.

1.3 Cited Standards

Formulated in accordance with **National Food Safety Standard for the Use of Food Additives (GB 2760-2024)**, **National Food Safety Standard for General Requirements of Food Colorants (GB 31640)**, **Raw Material Catalogue of Health Foods – Spirulina**, **Catalogue of Feed Additive Varieties** and relevant industry specifications. It is combined with the thermosensitive, acid-sensitive and photosensitive physicochemical properties of phycocyanin as well as the production processes of various product categories.

2. Basic Properties of Phycocyanin

The processing technology, addition timing, maximum dosage and system compatibility of phycocyanin are determined by its own physicochemical and functional properties, which serve as the core premise for standardized addition operations. The specific properties are as follows:

2.1 Physicochemical Properties

- **Solubility and Dispersibility**:

  Phycocyanin is easily soluble in pure water and can be completely dissolved to form a clear azure blue solution. The dry powder is fine and light with good dry mixing and dispersibility, showing excellent compatibility with sugars, milk powder and powder materials. High-concentration systems are prone to slight color precipitation upon standing; liquid systems require moderate low-speed stirring for stability, suitable for water-soluble batching, low-temperature emulsification and powder compounding processes.

- **Thermal and Acid Stability**:

  It has strong heat sensitivity; temperature above **55℃** easily causes molecular denaturation and pigment degradation, resulting in blue fading, graying, whitening and loss of activity. It has prominent acid sensitivity, with optimal color and stability in neutral and weakly alkaline systems of **pH 5.0-8.0**. Strongly acidic environments (**pH < 5.0**) easily cause flocculation, precipitation and color fading; high temperature combined with acid greatly accelerates the degradation rate.

- **Light Stability**:

  Highly sensitive to visible light and ultraviolet rays; long-term light exposure easily causes fading and degradation. The whole process requires light-proof batching, storage and filling.

- **Basic Parameters**:

  Food-grade phycocyanin: Color value **E10%1cm 620nm≥180**, protein content **≥60%**, moisture **≤6.0%**. The dry powder is dark blue with no peculiar odor; 1% aqueous solution presents transparent azure blue. It has strong hygroscopicity and stable properties when sealed and protected from light at room temperature.

2.2 Core Functional Properties

- **Natural Coloring Function**:

  As a water-soluble natural blue colorant, it endows products with pure sky blue, royal blue and blue-purple tones, perfectly replacing synthetic artificial blue pigments, and conforming to the mainstream trend of clean-label and naturally additive-free food R&D.

- **Nutritional Fortification Function**:

  Rich in phycobiliproteins, essential amino acids, polypeptides and trace active substances. It supplements high-quality water-soluble protein, upgrades the nutritional level of products and matches the positioning of high-end nutritional foods.

- **Bioactive Function**:
  Possesses physiological activities including strong antioxidant, anti-inflammatory, immune regulation and free radical scavenging effects. It empowers functional foods, health foods and high-end pet foods to enhance product added value.
- **Process Compatibility**:
  Can be compounded with conventional raw materials such as sugar alcohols, vitamins, plant extracts and milk powder. It is incompatible with high temperature, strong acidity, strong light irradiation and high-shear homogenization; suitable for low-temperature water-soluble batching, normal-temperature dry powder mixing and post-stage low-temperature addition processes.

2.3 Safety and Compliance Requirements

Phycocyanin is an officially approved natural food colorant, common food raw material and feed additive, complying strictly with the scope of use and limit specifications of **GB 2760-2024**. Ordinary foods shall be added in appropriate amounts for coloring according to production processes; health foods, infant foods, special dietary foods and feed products must strictly follow the national standard dosage limits of corresponding categories. Daily dietary intake is safe with no health burden; health foods shall clearly mark applicable groups and consumption suggestions in compliance with regulations.

3. General Specifications for Addition Technology

The following general operating specifications shall be followed for adding phycocyanin to all product categories to avoid quality problems such as pigment fading, flocculation and precipitation, poor dispersion and activity degradation.

3.1 Pretreatment and Dispersion Methods

- **Water Pre-dissolution Addition Method**:
  Applicable to all liquid and emulsified products (beverages, dairy products, oral liquids, sauces, jelly serums, etc.).

  Key Operation Points: Adopt normal-temperature light-softened water (**20-30℃**, hot water is strictly prohibited). Feed materials at a ratio of phycocyanin to water of **1:8-12**, stir at low speed (**200-400r/min**) for **10-15 minutes** until completely dissolved without particles or floccules. Put into production within 30 minutes after pre-dissolution; keep covered and protected from light throughout the process to avoid light-induced fading.

- **Dry Powder Premixing Addition Method**:

  Applicable to all solid products (solid beverages, meal replacement powder, baking powder materials, tablet candies, compound seasoning powder, feed powder materials, etc.).

Key Operation Points: Premix and dilute phycocyanin with inert carriers such as maltodextrin, lactose, corn starch and sugar alcohols at a ratio of **1:6**. Stir in a sealed low-speed state for **5-8 minutes**. After uniform mixing without color difference and agglomeration, add to the main material mixing process to solve problems of light dry powder flying and local color spots.

- **Compounding Taboo Principle**:

  Prioritize compounding with sugar alcohols, dietary fiber, vitamins and neutral plant extracts. Direct dry mixing or high-temperature co-dissolution with strong acid raw materials such as citric acid and malic acid is strictly prohibited. All high-temperature boiling, sterilization, baking and steaming processes must be completed before adding phycocyanin; keep away from strong light throughout the process.

3.2 General Key Points of Addition Procedures

- **Addition Timing**:

  Core principle – low-temperature post-stage addition, full light protection, away from high temperature and strong acid. For thermally processed products, cool down to **below 40℃** before feeding after boiling, sterilization, baking and steaming are completed.

- **Stirring Requirements**:

  Adopt low-speed gentle stirring for aqueous systems; high-shear and high-pressure homogenization are prohibited to prevent damage to protein molecular structure and color graying. For solid systems, stir until the overall color is uniform without blue spots or local shade difference.

- **Metering Requirements**:

  Use high-precision micro electronic scales for accurate feeding. For color-matching products, conduct small-scale tests according to color gradient standards, strictly control the dosage to ensure consistent batch color and stable quality.

3.3 General Quality Control Standards

- **Dispersion and Color**:

  Solid products have no blue agglomeration or color spots; liquid products have transparent and uniform solution without flocculation, precipitation, graying or

whitening.

- **Sensory Requirements**:

  Finished products have no algal fishy odor or peculiar smell, with natural and pure blue tones, free from yellowing, decolorization and local discoloration abnormalities.

- **Stability and Compliance**:

  The color of finished products is storage-resistant and not easy to fade; the coloring dosage complies with the national standard limits of GB 2760, and label marking and ingredient labeling are true and compliant.

4. Addition Technology Guidance by Application Field

Clarify the exclusive dosage, procedures, operation key points and functional objectives of phycocyanin combined with the process characteristics and formula acid-base system of various product categories, so as to realize standardized on-site operation.

4.1 Beverage Category (Liquid Beverages & Solid Beverages)

4.1.1 Applicable Products

Functional drinks, plant protein beverages, sparkling drinks, fruit and vegetable juice beverages, instant solid meal replacement powder, functional solid beverages, etc.

4.1.2 Dosage

Liquid beverages: **0.02%-0.2%** (mainly for color matching), **0.2%-0.8%** (mainly for functional nutritional fortification);

Solid beverages: **0.5%-3.0%** (calculated by total formula mass).

4.1.3 Addition Procedures & Operation Key Points

- **Liquid Beverages**: After completing all ingredient batching and sterilization procedures, cool down to **below 35℃** away from light. Slowly pour the pre-dissolved phycocyanin aqueous solution into the batching tank, stir in sealed low speed for **8-10 minutes**. No homogenization is required; conduct direct aseptic low-temperature filling after mixing evenly. For acidic fruit and vegetable beverages, adjust the system pH to **≥5.0** with buffer salts in advance before feeding to prevent flocculation and fading.
- **Solid Beverages**: Adopt sealed dry powder premixing procedure. Premix and dilute phycocyanin with maltodextrin, fructooligosaccharides and fruit and vegetable powder carriers, then mix evenly with other raw materials as a whole. Conduct low-temperature granulation, light-proof drying (air inlet temperature **≤45℃**) and sealed packaging to ensure transparent and uniform color after reconstitution.

4.1.4 Functional Objectives & Precautions

- **Functional Objectives**: Endow beverages with natural and pure royal blue tones, replace artificial blue pigments, fortify water-soluble active protein and antioxidant properties, and create clean-label functional beverages with natural attributes.
- **Precautions**: Carbonated beverages must be added at low temperature away from light after inflation, sterilization and cooling are fully completed to avoid pigment damage caused by pressure, temperature and acidic environment. All finished blue beverages must be stored in sealed light-proof packaging to prevent rapid fading induced by light exposure.

4.2 Dairy Category (Liquid Milk, Yogurt, Milk Powder, Plant Milk)

4.2.1 Applicable Products

Flavored modified milk, low-temperature fermented yogurt, yogurt drinks, middle-aged and elderly nutritional milk powder, soybean/oat plant milk, meal replacement milk powder, etc.

4.2.2 Dosage

0.03%-0.6% (calculated by total formula mass).

4.2.3 Addition Procedures & Operation Key Points

- **Liquid Milk / Plant Milk**: After milk source sterilization and basic homogenization, cool down to **30-40℃** away from light for post-stage batching. Add pre-dissolved phycocyanin solution and stir evenly at low speed. Conduct aseptic filling with full light-proof operation to avoid protein denaturation and emulsion graying caused by high temperature.
- **Fermented Yogurt**: Strictly adopt low-temperature light-proof addition after fermentation. Feed materials after yogurt fermentation maturation and cooling to **below 35℃**, mix gently at low stirring speed. Feeding before fermentation is strictly prohibited to prevent impact on probiotic activity and curd texture.
- **Milk Powder Products**: Add by dry mixing at normal-temperature sealed dry powder mixing stage after spray drying is completed. Fully premix with milk powder and nutritional fortifiers under normal temperature and light-proof conditions to protect activity and color.

4.2.4 Functional Objectives & Precautions

- **Functional Objectives**: Endow dairy products with natural blue appearance, supplement water-soluble active phycobiliproteins, cooperate with probiotics to improve body metabolism and antioxidant capacity, and enhance product differentiation and high-end attributes.
- **Precautions**: The pH of dairy systems is relatively low, so acidity must be strictly controlled. The operating temperature shall not exceed **40℃** with full light protection.

For high dosage addition, a small amount of phosphate stabilizer can be compounded to improve system color stability.

4.3 Baked Food Category (Bread, Pastry, Biscuits, Multigrain Pasta)

4.3.1 Applicable Products

Artistic color-matched bread, fancy pastries, crisp biscuits, colored steamed buns, dried noodles, baked meal replacement snacks, etc.

4.3.2 Dosage

0.05%-1.2% (calculated by total flour mass), appropriately increased for high-end color-matched baked products.

4.3.3 Addition Procedures & Operation Key Points

Add one-time at the sealed dry powder premixing stage of powder materials. Fully premix phycocyanin with flour, multigrain powder, sugar powder and other powder raw materials away from light, then add water, egg liquid and oil for dough kneading with dough temperature controlled **≤28℃**. Conduct normal fermentation and proofing processes; cool quickly and store away from light after baking to reduce continuous pigment degradation by residual high temperature. The drying temperature of biscuits and dried noodles shall be controlled **≤50℃** to avoid direct color fading caused by high temperature baking.

4.3.4 Functional Objectives & Precautions

- **Functional Objectives**: Create natural blue color matching for baked products, replace artificial pigments, supplement plant active protein and amino acids, and enhance the healthy natural attributes and appearance differentiation of baked foods.
- **Precautions**: Reduce the dosage when baking temperature is higher than **180℃** to prevent blue darkening and graying caused by high-temperature oxidation. Maintain the dough pH at neutral to weakly alkaline for optimal effect, avoiding dull color caused by acidic ingredients.

4.4 Meat Product Category (Sausages, Meatballs, Prepared Fillings)

4.4.1 Applicable Products

Low-temperature steamed colored sausages, creative meatballs, quick-frozen prepared meat fillings, pre-made dish color-matched fillings, etc.

4.4.2 Dosage

0.03%-0.5% (calculated by total meat emulsion mass).

4.4.3 Addition Procedures & Operation Key Points

Add phycocyanin uniformly in the later stage of low-temperature light-proof chopping for meat products. After completing basic chopping, seasoning and water retention

procedures of meat emulsion, slowly add normal-temperature pre-dissolved phycocyanin aqueous solution into the chopper, conduct gentle low-speed chopping for 3 minutes at low temperature (**≤10℃**) to fully integrate with meat emulsion and auxiliary materials. Subsequently perform casing filling, forming and low-temperature steaming procedures; feeding in the early stage of high-temperature steaming is strictly prohibited.

4.4.4 Functional Objectives & Precautions

- **Functional Objectives**: Realize natural color matching of meat products, replace synthetic artificial pigments, slightly supplement active nutritional substances, and enrich the product structure of creative prepared meat products.
- **Precautions**: Strictly control system acidity to prevent phycocyanin flocculation and fading caused by acidic curing environment of meat products. Maintain low temperature and full light protection throughout the process to avoid color and activity damage caused by high-temperature processes.

4.5 Candy & Jelly Category (Gummy Candy, Hard Candy, Gel Jelly)

4.5.1 Applicable Products

Gel gummy candy, low-sugar fancy hard candy, carrageenan/pectin jelly, functional meal replacement gummy candy, etc.

4.5.2 Dosage

Hard candy: **0.01%-0.3%**; Gummy candy/Jelly: **0.05%-0.6%** (calculated by total formula mass).

4.5.3 Addition Procedures & Operation Key Points

Uniformly adopt low-temperature light-proof addition process after boiling and gel melting: After completing sugar boiling and melting procedures for hard candy and gummy candy, cool down to **below 40℃**, add pre-dissolved phycocyanin solution away from light, stir evenly at low speed then cool and form quickly. For jelly, feed materials away from light after colloid boiling and sterilization and cooling to **35-40℃**, mix gently, then fill and condense.

4.5.4 Functional Objectives & Precautions

- **Functional Objectives**: Provide pure natural blue color, completely replace artificial blue pigments, and create natural, low-sugar and clean-label leisure candy and jelly products.
- **Precautions**: Feeding during high-temperature sugar boiling stage is strictly prohibited, as high temperature directly causes phycocyanin coking, fading and peculiar odor generation. The pH of acidic jelly must be adjusted to **≥5.0** in advance to prevent flocculation and uneven color mottling of the gel system.

4.6 Frozen Food Category (Ice Cream, Frozen Pasta)

4.6.1 Applicable Products

Fancy blue ice cream, low-temperature ice products, colored frozen multigrain dough, quick-frozen creative snacks, etc.

4.6.2 Dosage

0.02%-0.4% (calculated by total formula mass).

4.6.3 Addition Procedures & Operation Key Points

- **Ice Cream / Ice Products**: After ingredient sterilization and basic homogenization, cool down to **below 30℃** away from light, add pre-dissolved phycocyanin solution and stir gently evenly, then enter aging, freezing and light-proof filling procedures with full low-temperature light protection.
- **Frozen Pasta**: Add away from light at the sealed dry powder premixing stage, mix evenly with powder materials for dough kneading and forming, then conduct rapid low-temperature freezing to lock color and activity at low temperature and reduce color attenuation.

4.6.4 Functional Objectives & Precautions

- **Functional Objectives**: Endow frozen foods with natural dreamy blue appearance, enhance product appearance and high-end leisure attributes; free of artificial pigments to better meet healthy consumption demands.
- **Precautions**: Store finished products at constant temperature **-18℃** away from light throughout the process, avoiding color stratification and fading degradation caused by repeated freeze-thaw and direct light irradiation.

4.7 Condiment Category (Sauces, Compound Soup Bases)

4.7.1 Applicable Products

Creative compound salad dressing, fruit and vegetable condiment sauce, solid compound color-matched soup bases, functional seasoning powder materials, etc.

4.7.2 Dosage

0.04%-0.8% (calculated by total formula mass).

4.7.3 Addition Procedures & Operation Key Points

For sauce products, feed materials after emulsification, boiling and sterilization are completed and cooled to **below 40℃** away from light, conduct low-speed gentle emulsification stirring for **6-8 minutes**, then cool in sealed light-proof condition. For solid seasoning powder and compound soup bases, adopt sealed dry powder premixing process; mix phycocyanin evenly with salt, spices and auxiliary materials away from light then seal and package.

4.7.4 Functional Objectives & Precautions

- **Functional Objectives**: Create creative blue-toned compound condiments, replace artificial pigments, enrich product visual hierarchy and natural health attributes, and enhance market differentiation competitiveness.
- **Precautions**: Fermented condiments can only be added at the low-temperature light-proof finished product blending stage; early feeding is prohibited to avoid interfering with strain fermentation and color stability.

4.8 Health Food Category (Tablets, Granules, Oral Liquids, Capsules)

4.8.1 Applicable Products

Antioxidant nutritional tablets, water-soluble protein granules, immune-regulating oral liquids, dietary supplement capsules and other health foods.

4.8.2 Dosage

1.0%-30% (calculated by total formula mass), mainly added as functional raw materials supplemented with coloring, strictly complying with dosage specifications for health food raw materials.

4.8.3 Addition Procedures & Operation Key Points

- **Tablets / Capsules**: Add at sealed light-proof dry powder premixing procedure. Fully mix phycocyanin with microcrystalline cellulose and auxiliary materials, conduct low-temperature light-proof granulation and drying (temperature **≤40℃**), then complete tableting and capsule filling to ensure moldability and activity retention.
- **Granules / Oral Liquids**: Granules refer to the sealed dry mixing process of solid beverages; oral liquids are batched at low temperature away from light (**≤35℃**), followed by aseptic low-speed filtration, gentle homogenization and light-proof aseptic filling after pre-dissolution.

4.8.4 Functional Objectives & Precautions

- **Functional Objectives**: Rely on the antioxidant and immune-regulating activities of phycocyanin to empower dietary supplement and physical conditioning health foods, while realizing natural color matching and conforming to the natural additive-free positioning of high-end health foods.
- **Precautions**: Strictly follow national standard dosage and labeling specifications for health foods; maintain low temperature, full light protection and isolation from high temperature and strong acid in all procedures. Store finished products in sealed light-proof packaging to ensure long-term stability of activity and color.

4.9 Feed & Pet Food Category (Pelleted Feed, Pet Wet & Dry Food)

4.9.1 Applicable Products

Color-enhancing feed for livestock and poultry breeding, aquatic seedling feed, pet dry food, pet wet food, functional pet snacks.

4.9.2 Dosage

0.2%-3.0% (calculated by total formula mass), appropriately increased for aquatic color enhancement and high-end pet foods.

4.9.3 Addition Procedures & Operation Key Points

- **Pelleted Feed / Pet Dry Food**: Add away from light at the sealed dry powder premixing stage. Mix evenly with raw materials such as corn flour, soybean meal and feed additives, then conduct low-temperature extrusion puffing and light-proof low-temperature drying forming to reduce pigment and activity loss caused by high temperature.
- **Pet Wet Food**: Add pre-dissolved phycocyanin solution away from light after basic ingredient sterilization and boiling are completed and cooled down. Mix gently with meat raw materials and fruit and vegetable auxiliary materials, then conduct low-temperature sterilization and light-proof filling and sealing.

4.9.4 Functional Objectives & Precautions

- **Functional Objectives**: Improve the body color enhancement effect of aquatic products, livestock and poultry; enhance the antioxidant capacity and immunity of pets, optimize hair condition, and improve the nutritional and added value of feed and pet foods.
- **Precautions**: 🔵 Strictly control puffing temperature and adopt low-temperature puffing process; control the dosage to avoid impact on feed palatability caused by excessive addition; store raw materials and finished products away from light throughout the process to prevent fading.

5. Common Problems and Solutions

Summarize high-frequency quality problems in the mass production of phycocyanin, accurately locate causes and provide standardized solutions to fully guarantee production stability.

5.1 Dry Powder Flying, Local Color Spots & Poor Dispersion

🔵 **Problem Causes**: Phycocyanin dry powder is light and prone to dust emission; direct feeding without carrier premixing; insufficient stirring time.

🔵 **Solutions**: Must be premixed and diluted with carriers such as maltodextrin and starch at a ratio of **1:6** in a sealed state; extend low-speed stirring time, feed materials in a sealed manner throughout the process, and prohibit direct dumping of dry powder.

5.2 Finished Product Blue Graying, Whitening & Dull Color

🔵 **Problem Causes**: Excessively high feeding temperature leading to thermal denaturation; low system pH forming strong acidity; high-shear homogenization destroying molecular structure.

🔵 **Solutions**: Strictly implement low-temperature post-stage light-proof addition below **40℃**; adjust system pH to the stable range of **5.0-8.0**; prohibit high-pressure and high-shear treatment, only adopt low-speed gentle stirring.

5.3 Flocculation, Precipitation, Stratification & Fading of Liquid Products

🔵 **Problem Causes**: Excessive acidity; overlong standing time; degradation induced by direct light irradiation; lack of stabilizer compounding.

🔵 **Solutions**: Adjust pH value with buffer in advance; conduct rapid light-proof batching and filling to shorten standing time; keep the whole workshop away from light; appropriately compound phosphate and pectin to improve stability.

5.4 Rapid Fading of Finished Products During Storage

🔵 **Problem Causes**: Raw materials stored without light protection; finished products adopting transparent light-permeable packaging; warehouse storage exposed to strong sunlight.

🔵 **Solutions**: Store raw materials in sealed light-proof condition throughout the process; adopt light-impermeable packaging for finished products; isolate ultraviolet rays and direct light in warehouse and shelf storage.

5.5 Nutritional Activity Attenuation & Failure of Functional Claims

🔵 **Problem Causes**: High-temperature operation in all procedures; no light protection during batching and storage; non-compliant feeding process.

🔵 **Solutions**: Unify low-temperature operation standards and stay away from high-temperature heat sources; install light-proof facilities in batching workshops; strictly implement post-stage addition process, and test color value and activity indicators before factory delivery.

6. Storage and Transportation Requirements

6.1 Storage Requirements

- Phycocyanin raw materials shall be stored in sealed light-proof condition in cool, dry and ventilated warehouses with storage temperature **≤25℃** and relative humidity

≤55%. Direct sunlight, high temperature, humidity and strong light irradiation are strictly prohibited.

- Store raw materials in independent partitioned areas, isolated from toxic, harmful, odorous and corrosive materials to avoid pollution, odor cross-contamination and moisture absorption. Stacking height shall not exceed **6 layers** to prevent bag breakage, caking and deterioration caused by extrusion.
- The shelf life of sealed light-proof food-grade phycocyanin is **24 months**. Once opened, it must be vacuum-sealed and protected from light and used up within **10 days**. Open placement easily causes moisture absorption, oxidation and color value attenuation; expired and faded raw materials are prohibited from production.

6.2 Transportation Requirements

- The whole transportation process shall be protected from light, rain, moisture and heat, covered with light-shielding tarpaulins to prevent pigment degradation caused by packaging damage, sunlight exposure and moisture absorption.
- Transportation vehicles must be clean, dry, odorless and pollution-free; mixed transportation with toxic, harmful, corrosive and volatile odorous goods is strictly prohibited.
- Handle with care during loading and unloading to avoid violent impact and extrusion damage. Damaged, damp and powder-leaking raw materials are prohibited from warehousing and production.

7. Operation Safety Requirements

- Operators must wear work clothes, dust-proof masks, protective gloves and work caps on duty to prevent inhalation of light phycocyanin dry powder and avoid long-term direct contact of skin and eye mucous membranes with dust.
- Keep good ventilation and sealed operation in batching and dry powder premixing procedures to reduce dust flying and accumulation, and prevent hidden dangers of dust static electricity and workshop pollution.
- Strictly abide by equipment operation specifications when operating high-temperature boiling, sterilization and filling equipment, and take protective measures against scalds and mechanical collision injuries.
- Production waste, expired raw materials and waste packaging shall be classified and disposed of in a closed manner in accordance with environmental protection specifications, and random dumping is prohibited to avoid environmental pollution from dust and materials.
- Operators shall receive regular special training on phycocyanin process characteristics, light-proof operation, low-temperature control and safety protection. Immediately stop production and report to superiors in case of equipment failure, abnormal raw material color value or substandard finished product color; illegal forced operation is prohibited.