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Application of TCM Formula Granules (TCMFG) in the Preparation of TCM Oral Paste Prescriptions

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Abstract: This article introduces a new service provided by our hospital: the preparation of traditional Chinese medicine (TCM) oral paste prescriptions using TCM formula granules (TCMFG) as raw material. Drawing on data from 1,025 batches produced in our hospital between December 2021 and September 2025, we explored a rapid preparation process for these paste prescriptions, optimized excipient types and dosages, and systematically analyzed the technical parameters, critical quality control points, and clinical application value of granule-based TCM oral pastes by integrating relevant domestic literature. The results show that TCM oral paste prescriptions prepared with TCMFG are rapid, simple, and standardized, providing a reproducible hospital protocol and technical support for their wider application in chronic disease management and health preservation.

1. Introduction

Traditional Chinese Medicine (TCM) oral paste—also termed gaoji, gaozi or jiangaoji—is a thick, oral formulation guided by TCM theory and syndrome-based treatment. It is prepared from medicinal materials, tonics or edible ingredients by decoction, removal of residue, filtration and concentration. Depending on the adjuncts added, it is classified as hun gao (meat-based), su gao (vegetarian), mi gao (honey-based) or qing gao (clear) [1]. As a characteristic TCM dosage form, oral pastes integrate prevention and treatment, offer restorative and regulatory effects, and epitomize the concepts of "preventive therapy" and "individualized medicine" [2-4]. Conventional paste preparation using decoction pieces suffer from four intrinsic bottlenecks: poor process standardization, low batch-to-batch consistency, limited clinical accessibility and excessively long preparation time, all of which restrict large-scale hospital use. Introducing TCM formula granules (TCMFG) into paste production removes the prolonged decoction step yet retains the core of syndrome-based therapy, offering hospital pharmacies a streamlined and scalable alternative. Drawing on 1,025 granule-based TCM oral paste prescriptions prepared in our hospital from 2021 to 2025 and relevant domestic literature, we systematically describe the technical route, quality-control essentials, clinical value and dissemination experience of this platform.

2. Instruments and materials

2.1. Instruments

Semi-automatic TCMFG paste concentrator: Qirun Intelligent, model GFSD-002A
Electronic balance: Cixi Hongzuan HZ502A, d = 0.01 g
Medical refrigerator: Haier HYC-356, 2–8 ℃
Additional routine instruments were employed where necessary.

2.2. Materials

TCM Formula Granules (TCMFG): Hubei Heng'an Fulin Pharmaceutical Co., Ltd.
Honey: Pharmaceutical grade
Malt Sugar: Food grade

3. Preparation Process of TCM Oral Paste

TCM oral paste was prepared from TCMFG via the following steps: material preparation, dissolution, heating, excipient addition, paste concentration, and bottling.

3.1. Material Preparation

The prescription was reviewed and verified. TCM formula granules, excipients (e.g., honey, malt sugar), and precious/aromatic ingredients were weighed according to the specified doses and varieties.

3.2. Dissolution

All TCMFG were placed in a stainless-steel container, and moistened thoroughly with a small amount of warm water. Subsequently, 2–2.5 L of boiling water was added, followed by stirring until the granules were dissolved uniformly. In general, the ratio of TCMFG to water ranged from 1:1.2 to 1:1.4; the ratio could be adjusted to 1:1 once the operator was proficient in paste preparation [5]. If the TCMFG prescription contained gum-containing materials or ingredients prone to water absorption and swelling, the proportion of water could be appropriately increased to ensure complete dissolution of the granules.

3.3. Equipment Parameter Setting for TCM Oral Paste Preparation

Switch on the equipment, enter the setup interface, and set the time, power level, and stirring speed for the preheating, dissolution, concentration, and paste collection stages.

3.4. Heating

The homogeneous TCMFG concentrate was brought to a gentle boil. After complete dissolution, the temperature was raised to speed evaporation while avoiding boil-over. The solution was kept at ≥100 °C for ≥ 30 min to achieve sterilization.

3.5. Addition of Fine Materials

The required fine materials (precious or aromatic ingredients) were added to the boiling concentrate.

3.6. Addition of Honey or Xylitol

When the paste reached the “flag-hanging” or “bead-forming” consistency, heating was stopped and the excipient (honey or xylitol) was added under continuous stirring to prevent scorching [6].

Honey: 450 g per 500 g TCMFG (1 : 0.9). Xylitol: 50 g per 500 g TCMFG (1 : 0.1) for patients unable to consume honey.

3.7. Paste Collection

Continue stirring; the paste collection is completed when the paste becomes uniform, clear and viscous, with a typical yield of approximately 2L [7]. Cover the pot completely to keep the surface of the paste inside moist, which prevents the formation of a dry film that would compromise the quality and appearance of the paste. Reduce the stirring speed to avoid the formation of bubbles in the prepared paste. The "dropping into beads" state is defined as follows: insert a chopstick into the paste-boiling pot, then let the paste on the chopstick drip into a cup filled with cold water from a height of about 3 cm.

3.8. Bottling

Heating was switched off and the stirrer was reduced to its minimum speed. When the paste temperature had fallen to 80 ℃, it was transferred into 0.5 L wide-mouth bottles. Each bottle was sealed immediately, allowed to cool completely, and then stored under refrigeration. Note: Bottles were washed and oven-dried on the day of preparation.

4. Advantages of Using TCMFG for Paste Production

Granule-based preparation offers several advantages that enable large-scale production and wider promotion of TCM oral pastes. Between December 2021 and October 2025, our hospital's decoction room prepared 1,025 batches of TCM oral paste.

4.1. Stable and Consistent Efficacy

The raw materials of TCM formula granules are authentic medicinal herbs (daodi herbs). Every lot is tested for heavy metals and pesticide residues, and the active ingredient content complies with national standards. This eliminates the risks of quality inconsistency and adulteration associated with decoction pieces, yielding a standardized, fully traceable and strictly controlled TCM oral paste product [8].

4.2. Rapid Paste Preparation

Granule-based TCM oral paste preparation requires only approximately 1 hour of processing, a marked reduction compared with traditional paste preparation using decoction pieces [9]. Conventional paste preparation involves soaking, decocting, sedimentation, filtration, concentration, and paste collection, with total time of at least 16 hours. A prescription received on the same day can be processed immediately, and finished products can be supplied to patients within 1-2 days, whereas traditional decoction piece-based paste preparation requires at least one week.

4.3. Higher Efficiency

Every step of traditional oral paste preparation using decoction pieces—including soaking,

decocting, standing, and sedimentation—requires dedicated personnel. By switching to TCMFG , all labor required for pre-concentration steps is eliminated, and the shortened preparation cycle further reduces manpower input. Since each oral paste is customized for individual patients, mass production is difficult to achieve. The traditional method demands numerous containers and a large-area decoction room, whereas TCMFG-based preparation only requires a compact workspace, freeing up both floor space and labor resources simultaneously.

5. Application of TCM Oral Paste

5.1. Personalization of TCM Oral Paste

A personalized TCM oral paste is a tailor-made prescription formulated by physicians to correct internal disharmony, based on the patient's constitution and TCM syndrome characteristics. Unlike fixed proprietary Chinese medicine preparations manufactured in bulk, it embodies the principle of "one syndrome, one person, one formula, one drug." Such individualized prescribing reflects the core TCM tenets of addressing root causes, rebalancing Yin-Yang, correcting deviations, and restoring homeostasis to achieve equilibrium. It is both a hallmark dosage form of traditional Chinese medicine and an important facet of TCM culture [10-12].

5.2. Therapeutic Effects of TCM Oral Paste

In our hospital, TCM oral paste is chiefly used for long-term maintenance therapy in children with rhinitis. It significantly reduces the frequency and duration of recurrent respiratory tract infections, corrects constitutional imbalances, and restores bodily homeostasis, thereby enhancing the child's overall immunity [13]. In addition, TCM oral paste is prescribed for constitutional regulation in the elderly, who often present with zang-fu organ depletion, deficiency of both qi and blood, and a mixture of deficiency and excess syndromes. The sustained, gentle tonic action of the paste regulates qi and blood, harmonizes Yin and Yang, and embodies the core TCM principle of "treatment through tonification," re-establishing the body's physiological balance and stability [14].

5.3. Storage of TCM Oral Paste

Inadequate storage of TCM oral paste allows moisture ingress, leading to mold growth and compromised efficacy. TCM oral paste should be kept in a cool, dry place, as elevated temperatures accelerate spoilage and mold formation. Because the refined honey used in paste preparation is not completely dehydrated, residual moisture and trace impurities in the honey provide a favorable substrate for microbial growth.

5.4. Precautions for the Use of TCM Oral Paste

The prepared TCM oral paste should be consumed within 2 months. It is recommended to take the TCM oral paste with warm boiled water, and tea should be avoided. Tea contains tannins, which can complex with alkaloids in the tonic components to form insoluble precipitates, thereby reducing absorption and compromising efficacy. TCM oral paste should be discontinued during acute exogenous diseases such as the common cold. It can be resumed only after pathogenic factors have been eliminated and recovery is complete, to ensure the full exertion of its tonic effects.

6. Conclusion

In summary, compared with the conventional decoction-piece route, the TCM oral paste

preparation system using TCMFG as the starting material offers significant advantages in capital investment, time cost and process efficiency. Process parameters show minimal variation, the quality of the final product is highly consistent, and the product meets the requirements of the General Rules for Extractum in the *Chinese Pharmacopoeia*. With better stability and controllability than traditional methods, the system fully satisfies medical institutions' needs for standardized production and full-process quality control of TCM oral pastes. This technology can serve as a standardized protocol for hospital-based TCM oral paste preparation, provide new ideas and methods for further research on hospital paste preparation processes, and promote the wide application of TCM oral pastes in chronic disease management and health preservation.

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