

Fusion of Traditional Dietary Wisdom and Modern Medical Nutrition: Exploration and Validation of a Localized Dietary Strategy for Diabetes in China

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Abstract:

The prevalence of diabetes in China has reached 11.6%, affecting over 140 million people, more than 90% of whom have type 2 diabetes. While dietary therapy is a cornerstone of diabetes management, its clinical effectiveness is hampered by insufficient cultural compatibility. Western dietary patterns (e.g., the “low-carbohydrate diet” recommended by the American Diabetes Association guidelines, Mediterranean diet) fundamentally conflict with Chinese dietary culture characterized by “staple-food dominance,” “family-style shared meals,” and the concept of “food as medicine” (medicinal food homology). This cultural mismatch results in patient dietary therapy adherence of only 10.5%, significantly lower than the 45% observed in developed countries. This study systematically explored the blood sugar-control wisdom inherent in traditional Chinese dietary patterns (such as “Five Grains as Sustenance”, “Grain-Legume Mixing”, and “Seasonal Nourishment”) and medicinal foods (e.g., bitter melon, Chinese yam, cinnamon, goji berries). Combining this with modern medical nutrition tools (Glycemic Index/GI, Glycemic Load/GL, food exchange system, continuous glucose monitoring technology), we constructed a localized dietary strategy. By integrating both traditional practices (e.g., “Grain-legume mixing reduces postprandial blood glucose by 20%~35%”) and modern scientific validation (e.g., “Mucopolysaccharides from bitter melon inhibit α -glucosidase activity to reduce postprandial glucose”), this strategy addresses the core challenge of low dietary adherence. The strategy preserves cultural identity (e.g., modified recipes for festive foods like zongzi and mooncakes) while achieving an HbA1c reduction of 0.5%~0.8% through GL control. It provides clinicians with a practice-oriented framework that balances cultural compatibility with scientific efficacy, ultimately enhancing patient self-management capabilities.

Keywords: Cultural Adaptability, Medicinal Food Homology, Glycemic Load Control, Festival Food Reformulation, Family Dining Strategy

1. Introduction

1.1 The Global vs. Local Conflict in Diabetes Dietary Therapy

Modern diabetes dietary patterns largely originate from Western dietary structures and medical practices, leading to significant conflict with Chinese dietary culture. Western strategies emphasize “restricting carbohydrate intake proportion (often below 45%)” and “increasing animal protein and unsaturated fats.” In contrast, carbohydrates constitute 55%~65% of the average daily energy intake for Chinese residents, with staple foods (rice, wheat flour, coarse grains) forming the core of the dietary structure, rising to over 70% in rural areas [1]. This structural disparity causes extremely low patient acceptance of Western plans: 62% of rural patients mistakenly equate “carbohydrate control” with “starvation,” often covertly increasing refined grain intake; 83% of urban patients struggle with adherence due to “eating differently from family members,” with dietary management discontinuation rates reaching 91% during family gatherings or festive feasts [2].

Differences in cultural habits further exacerbate treatment challenges. Cultural dependence on sweet tea and butter tea among Tibetan patients leads to daily added sugar intake averaging 35g (far exceeding the WHO recommended limit of 25g), resulting in a dietary compliance rate of only 8.3%. Due to religious dietary restrictions, Hui patients find it difficult to accept “pork protein substitution strategies” often recommended in Western plans, leading to protein deficiency [2]. This cultural resistance directly impacts treatment efficacy: patients following Western plans show a 23% lower HbA1c target achievement rate (<7%) and an 18% higher complication rate (e.g., diabetic nephropathy) compared to those receiving localized dietary guidance [3].

1.2 The Modern Value of Traditional Chinese Dietary Wisdom

Traditional Chinese dietary practices embody profound wisdom highly relevant to diabetes prevention and management, with core ideas resonating remarkably with modern medical nutrition concepts across time. The

principle “Five Grains as Sustenance” emphasizes the foundational role of whole grains, aligning with modern nutritional conclusions that “whole grains improve insulin resistance through dietary fiber.” The traditional practice of “Grain-Legume Mixing” (e.g., red bean rice, mung bean porridge, mixed bean buns) leverages complementary amino acids to increase protein utilization from 40% to 80% and utilizes legume-derived resistant starch to delay glucose absorption [4]. The Ming-Qing Dynasty medical concept of “eating little and often” and “not overeating” coincides with the modern strategy of “distributing meals to reduce postprandial glucose fluctuations.”

Within the “food as medicine” concept, the empirical “hypoglycemic” effects of numerous foods have been confirmed by modern research. Dian Nan Ben Cao (Yunnan Materia Medica) records bitter melon’s ability to “clear pathogenic heat and quench excessive thirst”. Modern studies reveal its triterpenoid compounds protect pancreatic β -cells, increasing insulin content in diabetic rats by 1.8 times [5]. Yi Xue Zhong Zhong Can Xi Lu (Records of Heartfelt Experiences in Medicine with Reference to the West) used Chinese yam to treat “Xiao Ke” (wasting-thirst, analogous to diabetes). Modern experiments confirm its polysaccharides can reduce triglycerides (TG) by 27% and LDL-C by 32% in diabetic rats [6]. Cinnamon, used traditionally as a spice to “warm yang and transform qi”, has active components that enhance hepatic glucokinase activity by 94%, promoting liver glycogen synthesis [7]. These traditional experiences provide a rich repository for the localized strategy.

1.3 Research Purpose and Significance

This study aims to integrate tradition and modernity through three main pathways: Firstly, using modern science to dissect the molecular mechanisms of traditional wisdom (e.g., determining the optimal ratio and mechanisms of “Grain-Legume Mixing”). Secondly, incorporating traditional foods and practices into modern medical nutrition tools (e.g., developing a Chinese food GI/GL database, refining the food exchange system). Thirdly, developing educational programs tailored to Chinese cultural contexts (e.g., “Festive Food Guide,” “Family Shared Meals Handbook”).

The core value lies in solving the dual dilemma of “West-

ern plans lacking cultural grounding and traditional experience lacking evidence.” Through culturally adaptive design, dietary therapy adherence can be increased from 10.5% to over 50%. By scientifically validating traditional practices, HbA1c target achievement rates can be increased by 20%~30% [3]. Ultimately, this provides “Chinese experience” for diverse global diabetes management, demonstrating that dietary therapy need not abandon cultural traditions, but rather unearth science within tradition and empower tradition with science.

2. Core Elements of Traditional Chinese Dietary Patterns and Scientific Validation

2.1 Grain Category: From “Coarse Grains Nurturing the Body” to Precision Use of Whole Grains

In traditional diets, millet, oats, buckwheat, corn, and other coarse grains are revered as “essentials for nurturing life”. The concept “Five Grains as the Basis” from Huang Di Nei Jing (Yellow Emperor’s Inner Canon) underscores their foundational role. Modern research through compositional analysis and clinical trials validates their blood sugar control advantages: Beta-glucan (7%~10% content) in oat bran forms a viscous gel, inhibiting glucose diffusion in the intestine, reducing postprandial glucose peaks by 31%, an effect proportional to beta-glucan content [8]. Buckwheat has a low GI (40~50), and its unique rutin component stimulates insulin secretion. Daily intake of 50g buckwheat reduces HbA1c by 0.6% in type 2 diabetics, outperforming an equivalent amount of refined rice [4]. Insoluble fiber accounts for 80% of the dietary fiber in millet, increasing fecal bulk and promoting bowel movement, indirectly improving gut microbiota structure and increasing short-chain fatty acid (SCFAs) content by 25% [1].

Development of specialized foods for diabetics further validates traditional coarse grains. Oat bran bread (8% bran) developed by Liu Xingmei et al. contained 25.1g/100g dietary fiber, resulting in 2-hour postprandial blood glucose 2.3 mmol/L lower than white bread, with no significant taste difference [3]. Black rice bread (50% black rice flour) had a GL of only 12, significantly lower than white bread (GL=28), and improved glucose tolerance in gestational diabetes patients, reducing fasting blood glucose by 0.8 mmol/L [3]. These studies provide scientific backing for “replacing refined staples with coarse grains” and assign quantifiable standards to the traditional “coarse grains nourish the body” concept.

2.2 Legumes: Nutrient Synergy in “Grain-Legume Mixing”

Traditional pairings like “bean rice”, “mixed bean porridge”, and “red bean buns” leverage the complementary amino acids between grains (deficient in lysine) and legumes (deficient in methionine) to enhance protein utilization. Modern research further reveals their synergistic blood sugar control effects. Black beans and chickpeas contain 15%~20% resistant starch, which resists digestion by small intestinal enzymes, reaching the large intestine where gut flora like Bifidobacteria and Lactobacilli ferment it into SCFAs. Propionate suppresses hepatic gluconeogenesis, and butyrate stimulates gut secretion of glucagon-like peptide-1 (GLP-1), enhancing insulin sensitivity by 25% [4].

Functional components in legumes directly inhibit carbohydrate digestion and absorption. Anthocyanins in black bean skin (flavonoids) inhibit α -amylase activity by 66%~82%, a mechanism similar to acarbose. Adzuki bean saponins inhibit α -glucosidase activity by up to 70%, delaying the breakdown of disaccharides like sucrose and maltose [7]. Lin Jinxuejiao et al.’s crossover trial demonstrated that rice mixed with lentils (3:1 ratio) reduced postprandial glucose response by 20%~35% and insulin levels by 18% compared to plain rice. This effect was enhanced after cooling (e.g., in rice balls) due to starch retrogradation increasing resistant starch content [4].

The traditional wisdom of “eating legumes seasonally” also receives modern validation: Spring – Mung beans (clear heat, promote urination/dampness; polysaccharides improve gut barrier); Summer – Adzuki beans (strengthen spleen, promote urination/dampness; saponins regulate lipid metabolism); Autumn – Hyacinth beans (strengthen spleen, harmonize stomach; fiber improves constipation); Winter – Black beans (tonify kidneys, benefit essence; anthocyanins provide antioxidants) [1]. This seasonal selection aligns with the TCM principle of “harmony between heaven (nature) and humans” and adapts to seasonal metabolic needs, providing a temporal dimension to the localized strategy.

2.3 Medicinal Food Homology: Transformation from Experience to Evidence

In traditional dietary therapy, the empirical “hypoglycemic” effects of various foods have been clarified through modern research identifying active ingredients and mechanisms, establishing a complete evidence chain: “Traditional Documentation – Component Isolation – Mechanism Verification – Clinical Application.”

Bitter Melon (苦 瓜): Recorded in Dian Nan Ben Cao (Yunnan Materia Medica) as vital for “quenching exces-

sive thirst”, modern research isolated triterpenoids (e.g., momordicosides) from its ethanol extract which control blood sugar through multiple pathways: protecting pancreatic β -cells, nearly doubling their number and insulin granule content in diabetic rats; competitively inhibiting α -glucosidase activity ($IC_{50} \sim 0.8\text{mg/mL}$, comparable to acarbose [0.6mg/mL]); modulating gut microbiota - fermented bitter melon juice significantly increased Bifidobacteria and Lactobacilli abundance (2.1-fold and 1.8-fold respectively), reducing the Firmicutes/Bacteroidetes ratio [5]. Clinical studies show daily intake of 2g bitter melon powder can lower HbA1c by 0.8% in type 2 diabetics without hypoglycemia risk, also improving dyslipidemia (e.g., triglycerides) [9].

Chinese Yam (Shan Yao): Listed as a “superior-grade” herb in Shen Nong Ben Cao Jing (Divine Farmer’s Materia Medica Classic). Zhang Xichun proposed “Yu Ye Tang” (Jade Fluid Decoction) containing Chinese yam and astragalus for Xiao Ke in Yi Xue Zhong Zhong Can Xi Lu. Modern studies confirm polysaccharides as the core active component. Yam polysaccharides activate the AMPK/ACC/CPT-1 signaling pathway, promoting fatty acid β -oxidation, reducing TG by 27% in diabetic rats; by downregulating Txnip expression, they inhibit high-glucose-induced endothelial oxidative stress, reducing malondialdehyde (MDA) levels by 40%, protecting against diabetic erectile dysfunction and neuropathy [6]. Regarding complications, yam reduces urinary protein excretion by 35% in diabetic nephropathy mice and protects renal function by inhibiting aldose reductase activity to reduce sorbitol accumulation [6].

Cinnamon (Rou Gui): Used as a spice to “warm yang and transform qi”. Animal studies by Chu Wei et al. showed cinnamon significantly improved glucose tolerance in streptozotocin-induced diabetic rats (120min blood glucose 42.5% lower than model group), increased hepatic glycogen ($905.2 \pm 79.1 \text{ mg} \cdot \text{kg}^{-1}$ vs model $781.2 \pm 49.1 \text{ mg} \cdot \text{kg}^{-1}$) and muscle glycogen stores, and enhanced hepatic glucokinase activity by 94% ($P < 0.05$) [7]. This is potentially mediated by cinnamaldehyde activating glucokinase-mediated glycogen synthesis pathways, with a dose-dependent effect evident at 1g cinnamon powder daily [7].

Other Examples: Goji berries, Astragalus, Polygonatum also have validated effects. Xu Zhiyi et al. showed a compound goji berry tea bag (containing goji, astragalus, polygonatum) at high dose (1.6667g/kg) reduced blood glucose by 22.7% ($P < 0.05$) in alloxan-diabetic mice without affecting normal mice, demonstrating a “treating disease before it arises” advantage [10]. These studies provide molecular-level evidence for “medicinal food homology,” transforming traditional experience into quantifiable, re-

producible scientific conclusions.

3. Integration Paths: Traditional Wisdom and Modern Medical Tools

3.1 GI/GL-Based Optimization of Traditional Food Classification

Glycemic Index (GI) and Glycemic Load (GL) are core modern tools for assessing food’s impact on blood sugar but require localization for Chinese foods. GI reflects a food’s blood glucose-raising capacity ($GI \leq 55 = \text{Low}$), while GL factors in carbohydrate amount ($GL = GI \times \text{g carbs per serving} / 100$), better reflecting actual meal contexts [3].

Building a localized GI/GL database is foundational. For festive foods: Traditional glutinous rice zongzi (100g) $GL=18$; replacing 30% flour with buckwheat reduces GL to 12. Black sesame sweet dumplings (6 pieces) $GL=22$; replacing filling with Chinese yam paste reduces GL to 15 [3]. For common foods: Low GI options include lotus seeds ($GI=34$), konjac ($GI=20$), oats ($GI=45$), millet ($GI=55$) as staple alternatives. High GI foods (e.g., white rice $GI=73$, white steamed bun $GI=88$) need portion control or pairing with low GI foods (e.g., rice + bitter melon + tofu) [3].

GL control strategies must adapt to Chinese meal patterns. Daily GL should be ≤ 100 . Transforming the traditional “one staple, one porridge/dish” pattern to combinations like “multigrain rice ($GL=15$) + cold dressed bitter melon ($GL=3$) + tofu soup ($GL=5$)” reduces postprandial glucose fluctuations to $\leq 2.0 \text{ mmol/L}$ [3]. For meals: Breakfast: “Oat porridge ($GL=8$) + boiled egg ($GL=1$) + cold dressed wood ear fungus/cucumber ($GL=2$)”; Lunch: “Mixed bean rice ($GL=12$) + steamed fish ($GL=1$) + stir-fried spinach ($GL=3$)”; Dinner: “Millet porridge ($GL=6$) + vegetable tofu ($GL=4$)”. This aligns with the traditional health principle “Eat a hearty breakfast, sufficient lunch, light dinner” while enabling precise GL control [1].

3.2 Localized Adaptation of the Food Exchange System

The food exchange system defines “1 portion” as food providing 90 kcal, facilitating flexible meal planning, and requires three key adaptations for China:

Add Traditional Food Groups: Incorporate soy products and coarse grains. Original Western exchanges feature bread, milk, steak. Localized rules: 50g tofu = 1 portion (equivalent to 50g lean meat), 25g oats = 1 portion (equivalent to 25g white rice), 100g bitter melon = 1 vegetable portion (equivalent to 100g spinach) [3]. This allows flexibility (e.g., choosing “soy milk + multigrain bun” vs. “milk + bread”), preserving preferences.

Adapt Staple-Dominated Diet: Adjust macronutrient ratios. Western plans suggest 45% carbs. The localized plan, based on Chinese metabolic traits, sets this at 50%~60% (1000~1200 kcal from carbs in a 2000 kcal day), achieved via “whole grains + legumes” (e.g., 1 portion multigrain rice + 1 portion mixed bean porridge) [3]. Protein sources prioritize soy products (50%) and quality animal protein (50%), aligning with the “plant protein focus” tradition.

Design Family Shared Meal Strategies: Address “family sharing one table of dishes” scenarios with a “base portion + adjustment portion” model: Family shares one stir-fried green vegetable platter (1 portion per person), patient adds 1 portion of low GL food (e.g., cold dressed wood ear); For stewed meat, patient takes 1 portion (50g), family takes more, preserving atmosphere while controlling patient intake [1]. Post-adaptation, patient acceptance rose from 31% to 68%, family support from 42% to 85% [3].

3.3 Integrating Hand Measurements with Traditional Meal Settings

Aiming at Chinese habits of “eyeballing portions” and “avoiding scales”, the modern hand-measuring method was localized into a simple portion estimation system.

Portion Estimation Aligned to Chinese Tableware: 1 bowl multigrain rice (household porcelain bowl) = 1 fist size (~50g raw weight), 1 piece lean meat = palm size (no fingers, ~50g), 1 plate vegetables = two hands cupped (~500g), 1 spoon oil = thumb tip size (~10g) [3]. This tool-free method achieved 92% comprehension in rural patients vs. only 38% for complex weighing [1].

Cooking Method Optimization Retaining Tradition: Recommend steaming (e.g., multigrain buns), boiling (e.g., mixed bean porridge), cold dressing (e.g., vinegar-dressed bitter melon) – reducing oil/fat intake by 40% vs. frying; Use “low oil quick stir-fry” instead of “braising in soy sauce”; Parboil meats to remove fat before cooking. Utilize vinegar and cinnamon for flavor and blood sugar control – Acetic acid in vinegar delays gastric emptying by 30%, lowering postprandial glucose by 31.4%, optimal at 1.68g acetic acid (~30mL of 6% vinegar) [11].

Shared Meal Tactics for Family Settings: Use serving chopsticks to pre-portion the patient’s share, preventing overeating during gatherings; Cook “two versions,” e.g., family braised pork, patient takes 1 portion (50g), plus steamed fish; At festive meals, start with vegetables and protein before minimal staple intake to reduce glycemic swings [1]. These tactics increased meal compliance during family gatherings from 15% to 58% [3].

4. Construction Principles and Practical Recommendations for China’s Lo-

calized Diabetes Dietary Strategy

4.1 Core Construction Principles

Cultural Adaptability: Preserve the core of Chinese food culture. Maintain the foundational role of staples, controlling blood sugar via “coarse grain substitution” (e.g., 1/3 white rice + 1/3 millet + 1/3 red bean) not “staple reduction,” avoiding patient dropout due to “hunger pangs.” Respect “holiday food” traditions by modifying zongzi (substitute 30% glutinous rice with buckwheat), mooncakes (use Chinese yam paste filling, reduce sucrose), and sweet dumplings (skin with multigrain flour), enabling participation in family feasts [8].

Tailor ethnic needs: Modify Tibetan sweet tea to “low-lactose milk + oats + minimal butter,” provide Hui patients with “legume protein + beef/lamb” alternatives to pork protein – unifying cultural identity and scientific control [2].

Scientific Validity: Emphasize evidence-based practice. Daily fiber intake ≥ 25 g from whole grains (oats, buckwheat), legumes (black beans, chickpeas), vegetables (spinach, celery). Control GL ≤ 100 . Prioritize nutrient-dense foods (e.g., dark greens + tofu), avoiding “empty calories” (sugary drinks, pastries) [1][10].

Macronutrient ratios tailored to Chinese metabolism: Carbs 50%-60% ($>1/2$ whole grain), Protein 15%-20% ($>1/2$ high-quality), Fat 20%-25% ($>1/2$ unsaturated) [3].

Personalization: Consider regional/individual variations. Regionally: North - increase oats/millet/mung beans (dry climate), South - increase brown rice/adzuki beans/Job’s tears (damp-heat climate). Individually: Adjust total calories based on activity level (sedentary: 20-25 kcal/kg/day); Modify foods based on complications (e.g., kidney disease: reduce beans, use low-protein rice). Age matters: Elderly with weak digestion need softer porridges/pastes; Children require sufficient quality protein (e.g., fish/shrimp) for growth [1][2].

4.2 Specific Implementation Plan

Dietary Pattern (“One-Staple-Two-Side-Three-Combinations” Framework): “One-Staple” : Whole grain main foods (e.g., oat rice, mixed bean porridge, buckwheat bun), 200-300g raw weight daily (adjust for activity). “Two-Side” : Diverse vegetables (≥ 500 g/day, $>1/2$ dark leafy like spinach/broccoli); Moderate quality protein (100g tofu product, or 50g fish/shrimp/lean meat). “Three-Combinations”: Each meal combines 1 whole grain, 1 vegetable, 1 protein source (e.g., “Millet porridge + Cold dressed spinach + Tofu”; “Buckwheat noodles + Stir-fried broccoli + Steamed fish”) [1].

Sample Daily Menus (Regional Examples):

North: Breakfast: Oat porridge (50g oats) + Boiled egg (1) + Cold dressed wood ear/cucumber (100g each); Lunch: Mixed bean rice (50g white rice + 25g red bean) + Cabbage stewed tofu (200g cabbage + 100g tofu) + Steamed chicken (50g); Dinner: Millet porridge (50g millet) + Stir-fried celery (200g) + Stir-fried mushrooms/bok choy (100g each).

South: Breakfast: Mixed grain porridge (30g rice + 20g mung bean) + Soy milk (200mL) + Cold dressed bitter melon (100g); Lunch: Brown rice (75g) + Winter melon shrimp (200g winter melon + 50g shrimp) + Stir-fried amaranth (200g); Dinner: Job's tears porridge (50g) + Tofu greens soup (100g tofu + 200g greens) [1].

Cooking & Seasoning (Preserve Flavors): Recommend steaming, boiling, stewing, cold dressing, low-oil stir-fry. Control oil to $\leq 20\text{g/day}$ (~ 2 Tbsp), salt $\leq 5\text{g/day}$. Use natural flavor enhancers: Vinegar (10-15mL/meal), cinnamon powder (1g/day), Sichuan pepper, star anise - replacing sugar and soy sauce (reducing hidden salt) [11][12]. Avoid traditional “high-sugar-high-oil” pitfalls: Replace sweet & sour sauce with “vinegar + minimal sweetener”; Substitute deep-frying with air frying (reduces fat by $\sim 50\%$) [12].

Innovative Education Tools (Enhance Acceptance): Develop food simulators showing oat bran bread/bitter melon/mixed beans to visualize “1 portion multigrain = egg size”; Create “Dialogue via Pictures” manuals illustrating “How to cook multigrain rice in a rice cooker,” “Holiday feast strategies”; Integrate “medicinal food homology” stories (e.g., Zhang Xichun using Chinese yam for Xiao Ke) into teaching, raising elderly patients’ knowledge awareness from 23% to 67% [3]. Community “Cooking Workshops” teaching multigrain bun/modified zongzi preparation boost practical skills [8].

5. Challenges and Future Directions

5.1 Current Challenges

Research Gaps on Traditional Foods: GI/GL data for regional staples (e.g., hull-less barley, foxnut, naked oats) is largely missing, excluding them from GL control. The dose-effect relationships of key compounds (e.g., how much bitter melon saponin/Chinese yam polysaccharide daily for efficacy?) and standardized extraction methods are unclear. Basic research on optimal “Grain-Legume” ratios (1:1 vs. 2:1?) and cooking effects (boiling vs. steaming?) is weak [5][9].

Cultural Disconnect in Education: Current tools rely on Western foods (bread, steak), lacking guidance for Chinese contexts (“How to pair dumplings with porridge?”,

“Choosing foods in hotpot”). Elderly patients struggle with terms like “GI/GL,” exhibiting low health literacy (only 12% in rural areas). Community nutritionists lack cross-training in “traditional diets & modern nutrition,” hindering localized advice translation [3].

Lack of Standardization & Implementation: The localized strategy is absent from the Chinese Guideline for Medical Nutrition Therapy of Diabetes, hospital meals still favor Western models. Commercial “diabetic foods” (e.g., special breads) often mimic Western formulas, missing “Grain-Legume Mixing” elements. Medical insurance lacks coverage for dietary education, leading to low patient willingness to pay (only 28%) [3] [8].

5.2 Future Directions

Deepen Foundational Research: Systematically measure GI/GL of 100+ Chinese foods, establishing an open database. Elucidate molecular targets (e.g., glucokinase, α -glucosidase) and structure-activity relationships of compounds like momordicosides, cinnamaldehyde. Provide high-level evidence for “Grain-Legume Mixing” and “Medicinal Food Homology” efficacy via RCTs [4][5][7].

Develop Smart Localized Tools: Build a GL database covering 1000+ Chinese ingredients; Design a “Multigrain Combo Calculator” app (input “rice + long beans” to get GL); Use Continuous Glucose Monitoring (CGM) for personalized food combinations; Create voice-interaction “Diet Coaches” using dialects to boost elderly access [3][8].

Promote Policy & Clinical Translation: Integrate the localized strategy into national guidelines; Establish “Traditional Diet Consultation Clinics” in community health centers; Support industry R&D for convenient multigrain/bean foods (e.g., ready-to-eat multigrain rice, modified mooncakes), included in chronic disease food subsidies; Provide nutritionist cross-training and certification in “traditional knowledge + modern skills” [3].

Enhance Interdisciplinary Collaboration & Global Outreach: Form “TCM + Western Medicine + Nutrition + Food Engineering” teams to mine more dietary wisdom from classical texts. Share China’s localized experience via initiatives like the Belt and Road to aid developing nations (e.g., India, Southeast Asia), promoting globally diverse diabetes dietary management [2].

6. Conclusion

The fusion of traditional Chinese dietary wisdom and modern medical nutrition is key to overcoming diabetes

dietary therapy dilemmas. By “scientifically deconstructing tradition and enriching science with tradition,” the localized strategy preserves cultural tenets like “Five Grains as Sustenance” and “Food as Medicine,” while utilizing GI/GL and food exchange for precise blood sugar control. This approach raises dietary adherence from 10.5% to over 50% and achieves HbA1c reductions of 0.5%-0.8%, balancing cultural identity and scientific efficacy [2][3]. Looking ahead, through deeper research, smart tool development, and policy advocacy, we aim to build a diabetes dietary management system that truly “integrates tradition and modernity, addresses individual and population needs.” Such integration not only promises to improve China’s diabetes prevention and control outcomes but also offers “Chinese experience” for global, diversified diabetes management – proving that the essence of dietary therapy lies not in negating tradition, but in innovating through cultural heritage, empowering culture with science, and making healthy eating genuinely integral to daily life.

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