

From Food Design to Hygiene Grade: Innovative Application of Chinese-Western Fusion Cuisine in Los Angeles County's Catering Hygiene Standards

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Abstract

The restaurant hygiene scoring system in Los Angeles County directly influences the dining experience of its residents. However, the core challenges of these standards often stem from an overlooked aspect: food design. By reevaluating the production and presentation methods of Chinese-Western fusion cuisine, it is possible to better meet hygiene standards while balancing cultural expression and culinary innovation. This paper explores how focusing on food design can introduce new methods of food production and presentation, providing a cleaner and higher quality dining environment for the residents of Los Angeles County.

Keywords: food design, hygiene standards, Los Angeles County, Chinese-Western Fusion Cuisine, culinary innovation

1. Introduction

1.1 Research Background

The Los Angeles County restaurant hygiene scoring system is an important tool to ensure public food safety. Since its implementation in the 1990s, the system has provided consumers with a transparent basis for choosing dining places by regularly inspecting the hygiene of restaurants and publicly evaluating the results with letter grades (A, B, C). This scoring mechanism not only directly affects the operation and reputation of restaurants but also indirectly shapes the food safety culture of the region.

The results of the hygiene scoring have a significant impact on the customer flow of restaurants. For example, restaurants with an A scoring generally attract more customers, while B and below scoring may lead to a decrease in the number of customers and even threaten the long-term survival of the restaurant. (San 2019) In addition, the system also puts tremendous pressure on restaurant operators, who need to keep the kitchen environment clean, manage food storage, and strictly comply with food safety regulations during busy operations. However, traditional food processing and design processes often lack sufficient consideration of hygiene requirements, resulting in a common phenomenon of reduced scores.

Many restaurants, especially those featuring complex cooking techniques or multi-level presentations, such as Chinese restaurants, Southeast Asian restaurants, and restaurants of other ethnic classic traditional dishes, often face the dilemma of mismatch between food design and hygiene scoring standards. (Cai 2015) Complex production processes, decorative elements that easily accumulate bacteria, and high-frequency manual operations all pose challenges to hygiene inspections. This contradiction is particularly prominent in classic traditional dishes, as it requires a balance between visual appeal, cultural expression, and taste experience.

Given the importance of hygiene scores to restaurants, exploring how to improve restaurant hygiene scoring by optimizing food design has become a topic of practical significance. By re-examining classic traditional dishes and transforming the production and presentation of Chinese-Western fusion cuisine, it can not only enhance the market competitiveness of restaurants but also promote the catering industry to better adapt to strict hygiene standards. This article aims to analyze the problems behind the hygiene scores of restaurants in Los Angeles County and propose innovative solutions with food design as the core, so as to provide citizens with a more hygienic and high-quality dining environment, while promoting the healthy development of Chinese-Western fusion cuisine.

1.2 Research Questions

The Los Angeles County restaurant hygiene scoring system has increased compliance pressure on catering operators through strict inspection standards and public scoring results. Although this system has effectively improved food safety awareness, the transparency of the scoring system has also brought greater operational risks to some restaurants. For example, restaurants with low scores may face financial difficulties due to customer loss, and the short time window before the scoring is updated may not be enough to solve all potential problems.

Especially in the field of traditional dishes of various ethnic groups, dishes often involve multiple ingredients and complex cooking techniques. Although these processes enrich the taste and visual effects, they often increase the difficulty of hygiene management. For example, raw food decoration, plate design with frequent manual operations, and sauce accessories that are prone to bacteria may become high-risk points for non-compliance in hygiene inspections. This makes it difficult for fusion restaurants to fully meet strict hygiene standards while maintaining creativity and beauty.

Survey data shows that many restaurants, especially Chinese restaurants, use traditional kitchen layouts and operating procedures. Although these designs have advantages in efficiency and proficiency, they often ignore the detailed requirements of modern hygiene standards. For example, cross-contamination of ingredients, improper cold chain storage management, and insufficient separation between cleaning areas and cooking areas can also lead to lower inspection scores.

Hygiene scores not only rely on equipment and process improvements but also on the execution capabilities of employees. However, according to the survey data, the high turnover of employees in the catering industry and limited training time make it difficult to implement hygiene standards. In addition, employees' lack of understanding of the scoring system may cause them to ignore some details, such as the frequency of changing gloves and the timely cleaning of utensils.

There are significant differences between Chinese cuisine and other cultural cuisines in cooking techniques, ingredient use and dish presentation. Some unique preparation methods of Chinese cuisine, such as open hot pot tables, common dine-in lettuce decorations, and pre-marinated meats, may be regarded as potential risks by hygiene inspections, resulting in low scores. This cultural difference has invisibly exacerbated the difficulty of Chinese restaurants in adapting to hygiene scores.

The above problems reflect the multiple challenges faced by the current hygiene scoring system in its implementation. To improve the score while maintaining the creativity and cultural characteristics of the dishes, restaurants need to focus on food design, re-examine their production processes, kitchen layouts and employee training, and fundamentally eliminate blind spots and deficiencies in the scoring. This innovative perspective also provides a new opportunity for Chinese-Western fusion cuisine to enhance its competitiveness.

1.3 Research Objectives

This study aims to explore the key role of food design in optimizing restaurant hygiene standards. By redesigning the production process, presentation form and tools used for dishes, high-risk links that may affect hygiene scores, such as cross-contamination of ingredients, decorations with frequent manual operations, and hygiene blind spots in complex production processes, can be reduced. This approach enables restaurants to significantly improve hygiene scores while maintaining food creativity and aesthetics.

Chinese-Western fusion cuisine has attracted much attention due to its unique cultural connotations and creativity, but it often faces many challenges in terms of adaptability to hygiene standards. This study hopes to combine the characteristics of Chinese-Western fusion cuisine and propose a design framework that combines cultural expression and hygiene standards. For example, optimize the selection and processing methods of ingredients, reduce decorative elements that are easy to hide bacteria, and use modern technologies (such as sous vide cooking and food-grade decoration) to enhance the hygiene of dishes.

This study will also verify the effect of food design on improving restaurant hygiene scores through experimental data and case analysis. By comparing the performance of traditional dishes and redesigned dishes in hygiene inspections, the role of food design in improving scores is quantified, providing a scientific basis for its promotion in actual operations.

This study hopes to promote the balance between hygiene standards and the artistry of dishes through cultural integration. For example, in the design of Chinese-Western fusion cuisine, its unique cultural expression (such as color matching and plating art) is retained, and it is improved in a more hygienic way, so as to achieve a win-win effect between dish design and hygiene score.

Through food design, a set of operational and popularizable solutions is provided for the catering industry to help restaurants reduce costs and improve efficiency while meeting hygiene standards. This can not only improve customers' dining experience but also promote the sustainable development of the catering industry and make Chinese-Western fusion cuisine more competitive globally.

The core goal of this study is to solve the practical problems in the hygiene score of Los Angeles County through the innovative perspective of food design, while promoting the development of Chinese-Western fusion cuisine. Through the combination of theoretical research and practical verification, new ideas are provided for restaurant operators, regulators and food designers to jointly create a more hygienic, healthier and more delicious dining environment.

2. Literature Review

2.1 Criteria and Implementation Mechanism for Los Angeles County Restaurant Hygiene Scoring System

The Los Angeles County restaurant hygiene scoring system began in 1998, aiming to improve food safety and reduce food-related public hygiene problems through rigorous inspections and an open and transparent scoring system. (News 2015) The core standards and implementation mechanisms of this system provide a reference for similar systems in other parts of the world, and have become an important regulatory tool for the Los Angeles restaurant industry.

2.1.1 Structure and Core Standards of the Scoring System

The Los Angeles County hygiene scoring system uses letter grades (A, B, C) as the main form of evaluation results: Grade A (90 points and above): indicates that the restaurant has excellent hygiene and meets most hygiene standards.

Grade B (80-89 points): indicates that the restaurant has hygiene problems that need to be improved, but can still operate.

Grade C (70-79 points): indicates that the restaurant's hygiene is unqualified and usually receives rectification requirements.

Below 70 points: may be ordered to close until the problem is fully resolved.

The score is based on an inspection of key links in the restaurant's operations, including food storage temperature, freshness of ingredients, employee hygiene habits, kitchen cleanliness, and prevention of cross contamination.

2.1.2 Inspection Process and Scoring Mechanism

Hygiene inspectors conduct inspections in accordance with the provisions of the California Retail Food Code. The specific process includes:

Preparation stage: Inspectors do not need to notify the restaurant in advance and conduct random inspections directly on site to ensure that the restaurant's hygiene conditions are truly reflected.

On-site inspection: Through observation, recording and testing, a comprehensive assessment of the restaurant's food storage, processing, cooking and service links is conducted.

Score and feedback: The restaurant will be deducted points based on the severity of the problem and detailed improvement suggestions will be provided. The score is eventually converted into a letter grade and posted at the entrance of the restaurant for public reference. (Lz 2017)

The detailed results of each inspection will be recorded in the county hygiene department's database, and consumers can query it through the official website. This transparent mechanism improves the credibility of the score and also provides data support for restaurant improvements.

2.1.3 Effect of the System Implementation

Studies have shown that food safety incidents in Los Angeles County have significantly decreased after the implementation of the hygiene scoring system. For example, in 2000, a study found that hospitalizations for food-related illnesses have dropped by more than 20% since the implementation of the scoring system. At the same time, highly scored (A-scored) restaurants have attracted more consumers and promoted hygiene competition in the restaurant industry.

Nevertheless, this system also has some challenges. For example, small restaurants and family-run restaurants have difficulty coping with strict standards due to lack of resources, and cultural cuisines (such as Chinese cuisine) have conflicts with the scoring standards in some production processes, resulting in scoring results that sometimes do not fully match the actual food safety level.

2.1.4 Improvement Direction of the Scoring System

In recent years, the Los Angeles County hygiene Department has improved the efficiency and transparency of hygiene inspections by introducing digital tools such as online reporting and real-time feedback. In addition, the hygiene department has strengthened food safety training for restaurant employees to help them better understand and implement hygiene regulations.

In the future, the scoring system is expected to be further optimized, for example:

Introducing cultural sensitivity standards: respecting the unique craftsmanship of different cultural cuisines without sacrificing food safety.

Promoting smart regulatory tools: using AI to monitor the hygiene of restaurants and reduce human subjectivity.

Enhancing consumer education: improving consumers' understanding of hygiene scores so that they can choose dining places more effectively.

Through the analysis of the standards and implementation mechanisms of the Los Angeles County restaurant hygiene scoring system, it can be seen that this system has played a positive role in ensuring food safety and improving the level of the catering industry. However, its adaptability to specific cultural cuisines and its application in restaurants with limited resources still need to be further improved. This lays an important foundation for this article to propose improvement suggestions based on Chinese-Western fusion cuisine and food design.

2.2 *The Definition, Characteristics and Current Status of Chinese-Western Fusion Cuisine in the Los Angeles Catering Market*

2.2.1 The Connotation of Chinese-Western Fusion Cuisine

Chinese-Western fusion cuisine combines Chinese-Western cooking techniques, ingredients and cultural traditions to create dishes with diverse flavors and visual effects through innovative design. (Zhe 2024) It is not a simple superposition of elements, but a culinary art that seeks balance and novelty through a deep understanding of the dietary essence of the two cultures.

The core of fusion cuisine lies in cultural exchange and innovative inheritance, which not only reflects respect for different food cultures but also shows the chef's creativity in ingredients and skills.

2.2.2 Innovation and Challenges of Chinese-Western Fusion Cuisine

Chinese-Western fusion cuisine emphasizes the richness and diversity of taste. For example, by combining the five-flavor harmony theory of Chinese cuisine (sour, sweet, bitter, spicy, and salty) with the flavor levels of Western cuisine (such as the balance of sour and sweet, and the contrast between fat and acidity), a complex and harmonious taste structure is formed.

Chinese-Western fusion cuisine is good at combining representative ingredients from different cultures. For example, pairing Chinese black truffles with Western foie gras, or using Western brandy to cook traditional Chinese braised pork.

This cuisine often combines traditional Chinese techniques (such as stir-frying, steaming, and boiling) with innovative Western cooking methods (such as low-temperature slow cooking and molecular cuisine). For example, smoked lobster dumplings combine Chinese bun making skills with Western smoking techniques.

Dishes not only pursue taste and visual effects but also convey cultural connotations through ingredient selection and plating design. For example, using traditional Chinese blue and white porcelain plates to carry Western plating, or incorporating Western festive elements into Chinese cuisine.

Chinese-Western fusion cuisine often faces balance issues in the process of innovation. On the one hand, it is necessary to maintain the cultural identity of traditional cuisine; on the other hand, it is also necessary to cater to the tastes and aesthetic needs of modern diners through innovation. In addition, the complex production process may lead to difficulties in hygiene management.

2.2.3 Popularity and Development of Chinese-Western Fusion Cuisine in the Los Angeles Catering Market

As an international city with a fusion of multiple cultures, Los Angeles provides fertile soil for the development of Chinese-Western fusion cuisine. Its diverse population structure and high tolerance for food culture make Chinese-Western fusion cuisine popular in the market.

Los Angeles diners have a great interest in novel flavors and creative dishes. Chinese-Western fusion cuisine has attracted a large number of consumers, especially the younger generation of diners, because of its innovation and cultural stories. (Sohu 2016)

Some high-end restaurants and celebrity chefs are pushing Chinese-Western fusion cuisine to a higher artistic level. (Ming 2025) For example, some restaurants combine Peking duck with French cooking to create dishes with a new flavor; some restaurants integrate Cantonese dim sum into molecular cooking technology to give traditional dishes a modern vitality.

As the popularity of Chinese-Western fusion cuisine increases, more and more restaurants are beginning to introduce the concept of fusion cuisine. (Cq 2021) This trend not only enhances the diversity of the market but also intensifies competition in the catering industry. Restaurants need to stand out through unique dish design and excellent hygiene management.

The popularity of Chinese-Western fusion cuisine in Los Angeles also faces the problem of adaptability to hygiene standards. Complex combinations of ingredients and innovative production methods may increase the risk of food safety, and some restaurants lose points in hygiene scores.

In Los Angeles, fusion cuisine is gradually expanding from a few high-end restaurants to a wider market, including fast food, takeout and home cooking. (Laba 2024) At the same time, with the popularization of technology (such as molecular cuisine and digital kitchens), the production efficiency and hygiene level of fusion cuisine will be further improved.

The rise of fusion cuisine in the Los Angeles catering market not only reflects the trend of food innovation under a multicultural background but also shows the in-depth cultural and technical exchanges between Chinese-Western cuisine. However, the contradiction between its complex production process and hygiene standards also poses a challenge to the future development of this cuisine. Through more scientific food design and optimized hygiene management, a solid foundation can be laid for the long-term development of fusion cuisine in Los Angeles.

2.3 Theoretical Basis of Food Design: From Material Selection to the Hygiene of Food Preparation and Display

2.3.1 Definition of Food Design

Food Design is an interdisciplinary methodology that combines fields such as food science, art design, cultural studies, and hygiene management to create food products that are aesthetic, functional, and culturally expressive. (Yuan 2021) Its core concept is to not only enhance the beauty and experience of food but also optimize its safety and sustainability through innovative material selection, production technology, and presentation methods.

In the catering industry, food design not only focuses on taste and appearance but also includes how to meet hygiene standards and reduce food safety hazards in a scientific and reasonable way. Especially in areas like Los Angeles County, which have a strict hygiene scoring system, food design has become a potential key to improving restaurant scores.

2.3.2 Three Core Links of Food Design

1) Material Selection: The Starting Point of Hygiene

Choosing fresh, uncontaminated, high-quality ingredients is the first step to ensure food hygiene. For example, choosing vacuum-packed ingredients with a longer shelf life or food raw materials treated with antibacterial treatment can effectively reduce the risk of food spoilage. In the design of Chinese-Western fusion cuisine, ingredients must not only meet the needs of cultural expression but also take into account food safety. For example, replace the raw ingredients of traditional Chinese food (such as green vegetables and mushrooms) with processed versions that have undergone preliminary sterilization to reduce the possibility of microbial contamination. Choosing locally grown organic vegetables or sustainably caught seafood not only conforms to the trend of environmental protection but also reduces the risk of contamination or deterioration caused by long-distance transportation. (Wei 2023)

2) Food Preparation: The Key to Hygiene Control

Scientific cooking techniques can significantly improve the hygiene of food. For example, low-temperature vacuum cooking can not only preserve the flavor of the ingredients but also kill most bacteria; frying technology can also achieve rapid sterilization if the oil temperature and time are controlled well. Avoid cross-contamination in food preparation through clear operation partitions (such as separation of raw and cooked), the use of disposable food handling tools (such as gloves and cutting boards), and strict cleaning processes. Break down complex dishes into multiple simple steps to reduce the possibility of human error. For example, decorative sauces that require multiple layers of processing in Chinese-Western fusion cuisine can be processed in batches and stored in a unified manner to improve hygiene management efficiency.

3) Food Display: A Balance Between Hygiene and Beauty

Although traditional hand-made plating can increase the artistry of dishes, it is easy to increase hygiene risks due to frequent operations. By introducing food-grade decorative printers or edible molds, hygiene can be improved while maintaining beauty. Choosing easy-to-clean, high-temperature resistant container materials such as ceramics, glass or antibacterial metals not only enhances the visual effect of dishes but also helps with hygiene management. For example, using an oak tray to present Tea Smoked Lobster not only adds cultural connotations but also facilitates disinfection and storage. The display of fusion cuisine often pursues a sense of hierarchy but overly complex plating may hide bacteria or contaminants. Through simple lines, layered stacking methods and the natural texture of ingredients, both aesthetics and hygiene risks can be enhanced.

2.3.3 Interaction Between Food Design and Hygiene

Hygiene often requires the simplification of the preparation and presentation of dishes, while the sensory experience of high-end dining requires complex processes. Through innovative design, a balance can be found between the two. For example, the traditional Chinese steamed dim sum is changed to a Western molecular cuisine method, and the seasoning liquid is wrapped in an edible film, so as to achieve the unity of hygiene and innovation. The hygiene standards in different regions have different requirements for restaurants. For example, in Los Angeles, the strict hygiene scoring system requires the reduction of complex decorations that are easy to hide dirt; while in Chinese restaurants, traditional high-fire stir-frying or open cooking often becomes a pain point for scoring. By introducing closed cooking equipment and simplified plating, local hygiene requirements can be better met. Modern food technology (such as antibacterial packaging materials and intelligent temperature control equipment) provides greater hygiene protection for food design. For example, in Chinese-Western fusion cuisine, the temperature and humidity can be monitored by intelligent cooking equipment, which can not only preserve the unique flavor of the ingredients but also ensure that the food reaches the best hygiene state.

Food design is an important tool to improve food hygiene and consumer experience. From material selection to production process to display method, scientific and reasonable design can reduce food safety risks and form a benign interaction with hygiene standards. Under Los Angeles County's strict hygiene scoring system, combining food design with Chinese-Western fusion cuisine not only meets consumers' expectations for deliciousness and visual experience but also provides a practical solution for restaurants to improve their hygiene scoring.

3. Research Methods

3.1 Qualitative Analysis

In order to gain a deeper understanding of the common problems behind the Los Angeles County hygiene Score, this study uses a qualitative analysis method to reveal the key pain points in restaurant hygiene management and the practical challenges in the implementation of the scoring system through interviews with restaurant chefs and hygiene supervisors.

3.1.1 Research Subjects

Restaurants of different sizes and cuisines, including Chinese restaurants, Western restaurants, and Chinese-Western fusion restaurants, were selected to ensure the diversity and representativeness of the research results. Understand the hygiene difficulties faced by chefs in actual operations, such as the production process of complex dishes, food storage and cleaning, and how to find a balance between creativity and hygiene. It is expected to interview 10 chefs, covering different levels from small family restaurants to high-end restaurants.

Interviews with staff from the Los Angeles County hygiene Department, especially supervisors responsible for restaurant hygiene inspections. In-depth understanding of the implementation process of the hygiene scoring standard, the common problem categories in the scoring, and the actual observations and suggestions of supervisors during the scoring process. It is expected to interview 5 supervisors to obtain first-hand scoring mechanisms and standard explanations.

3.1.2 Interview Outline

Please see the appendix for the interview outline.

3.1.3 Data Collection and Analysis

Each interview will be transcribed, and non-verbal information from the interview will be recorded (such as emotional changes or particularly emphasized points). After the interview, the interviewee will be invited to fill out a short open-ended questionnaire to capture more detailed suggestions.

The interview content will be divided into different topics (such as common hygiene problems, scoring mechanism challenges, and improvement suggestions), and high-frequency keywords and repeated points will be identified. The answers of chefs and hygiene supervisors will be compared to find differences and consistency in the cognition of both parties. Combined with the actual cases of specific dishes or restaurants, the key contradictions and potential solutions in the hygiene score will be summarized.

The number of interviewees may not be enough to fully reflect the situation of all restaurants in Los Angeles County. The answers of the interviewees may be limited by their own experience and situation, and may not be able to objectively describe the full picture of the scoring mechanism. Cultural bias may affect the understanding of the hygiene issues of Chinese-Western fusion cuisine.

Through the interviews, the study will clarify the following aspects: high-frequency problems and major challenges in restaurant hygiene scores; the actual impact of the scoring mechanism on restaurant operations and hygiene management; the role that food design may play in hygiene management; and specific design improvement suggestions for Chinese-Western fusion cuisine.

These results will provide empirical evidence for subsequent research and lay the foundation for the innovative food design solutions proposed in this paper.

3.2 Case Study

Truffle Lobster Wellington is a classic Chinese-Western fusion cuisine, inspired by the traditional British Beef Wellington and the delicate processing techniques of Chinese food. This dish meets the dual requirements of deliciousness and hygiene standards through clever ingredient selection, innovative production technology and scientific hygiene management.

3.2.1 Features and Innovations

As the main ingredient, lobster is processed at low temperature to ensure a fresh and tender taste while reducing the risk of bacterial growth. By combining it with the classic French black truffle sauce, the flavor is enhanced while vacuum packaging is used to avoid sauce contamination. Storage-resistant frozen puff pastry is selected to reduce possible contamination during the handmade process. Using the delicate processing techniques of Chinese food, the lobster meat is marinated and slow-cooked at low temperature to lock in moisture and retain its fresh and tender taste. At the same time, the classic packaging technology of Western food is adopted: the marinated lobster is wrapped in puff pastry and baked at high temperature to ensure that it is cooked thoroughly while avoiding direct contact with the source of contamination. When the dish is served, gold foil is used as an embellishment to increase visual appeal. Gold foil is a food-grade decoration and is hygienic and safe. Served with steamed tender asparagus and roasted mini carrots, it reduces the complexity of decoration and presents a simple yet exquisite style.

3.2.2 Specific Measures to Meet Hygiene Standards

Lobsters are immediately placed in low-temperature refrigeration after purchase to ensure safe storage before use. Black truffle sauce is canned or vacuum-packed to reduce the risk of long-term exposure in the kitchen environment.

Lobster meat and raw puff pastry are processed separately, and the production area is clearly divided to reduce the mixing of raw and cooked ingredients. Precise temperature control equipment is used to ensure that the cooking process reaches the necessary temperature (internal temperature $\geq 145^{\circ}\text{F}$) to kill potential microorganisms. Chefs use disposable gloves to complete the marinating process to avoid direct contact with ingredients.

During the plating process, the side dishes and main dishes are served with sterilized tools to prevent secondary contamination. After cleaning, the tableware is sealed and transported to ensure the hygienic integrity from kitchen to table.

During a surprise inspection, the restaurant received high praise from the hygiene supervisor for its hygienic operation of Truffle Lobster Wellington: the low-temperature storage records of lobsters and puff pastry were complete and in compliance with the standards; the food ingredients were divided and operated without cross-contamination, and the production surface was clean; the dishes were plated without direct manual operation to ensure safety. In the end, the restaurant received an A grade score (95 points) and became a benchmark for hygienic management respected by the local catering industry.

3.2.3 Analysis and Inspiration

Choosing ingredients that are easy to store and have low contamination risks (such as vacuum-packed sauces and frozen puff pastry) reduces hygiene risks while ensuring the quality of dishes. Partitioning and operation

standardization during the production process (such as the use of disposable gloves and precise temperature control) are the key to ensuring hygiene. While maintaining the beauty of the dishes, the hygienic risks are reduced by reducing complex decorative elements and manual operations, which meets the scoring standards of Los Angeles County.

Truffle Lobster Wellington has successfully demonstrated that Chinese-Western fusion cuisine can not only make innovative breakthroughs in cultural expression and deliciousness but also achieve high hygiene standards through reasonable design and management. This provides valuable experience for the development and promotion of other fusion cuisine. As a successful case of Chinese-Western fusion cuisine, it demonstrates how scientific food design can find a balance between creativity and hygiene. Its experience shows that through careful selection of ingredients, standardized production processes and efficient hygiene management, fusion cuisine can not only meet consumers' taste needs but also easily cope with strict hygiene scoring systems, providing a solution worthy of reference for the industry.

3.3 Creative Experiment

3.3.1 Experiment Background

To verify how food design can optimize the hygiene score of a restaurant, this study proposes an innovative experiment: design and test a Chinese-Western fusion cuisine model that meets hygiene standards. The experimental goal is to reduce common hygiene risks through scientific dish design and process optimization, while retaining the innovation and cultural characteristics of fusion cuisine.

3.3.2 Experiment Objectives

The experiment objectives are as follows: create a Chinese-Western fusion cuisine that is both innovative and hygienic; evaluate the impact of design on hygiene scores through actual production and simulated hygiene inspections; and provide a set of food design and hygiene management frameworks that can be promoted for reference by the catering industry.

3.3.3 Experiment Methods

The experimental dish model is Herb-Infused Lotus Scallop Tower. Chinese lotus roots are sliced and blanched and then quickly cooled to retain the crispy and tender taste. Top-quality Canadian scallops that are quickly frozen are selected to ensure safety. Herb sauce is made by combining Western herbs (thyme, basil) and Chinese garlic paste, and vacuum-packed to extend the shelf life. Low-oil shortbread is used to make a crispy tower bottom, reducing the frying time to reduce the risk of oil contamination. The dish adopts a layered stacking design, with lotus root slices and scallops stacked alternately, which is both beautiful and easy to operate.

The experimental scenarios are divided into two groups, the traditional design group and the improved design group. The real kitchen environment is simulated, including peak operation and hygiene inspection process. The hygiene score simulation inspection content is as follows: food storage temperature and environmental conditions, hygiene control during the production process (such as cross contamination and tool cleaning), finished product presentation and safety assessment. The scoring rules are based on the Los Angeles County hygiene scoring standards, with A (90 points and above), B (80-89 points) and C (70-79 points) as the grades.

3.3.4 Experiment Steps and Results

The traditional group processed lotus roots and scallops manually and prepared vanilla sauce manually. All ingredients were processed and plated in the same area, which was frequent and complicated. The complex plate design was adopted, with outstanding visual effects but cumbersome operation. In the end, the traditional group scored an average of 85 points (B grade). The deduction items mainly focused on cross-contamination control and increased hygiene risks due to the complexity of the plate.

The improved group pre-processed lotus roots and scallops and used vacuum-packed vanilla sauce. Strictly separated operations were carried out, pre-processed ingredients were used, and the manual process of plate arrangement was reduced. The plate arrangement adopted a simple stacking design, which was fast and beautiful. Inspection items included cold chain storage, cooking temperature, tool cleanliness and cross-contamination control. In the end, the improved group scored an average of 95 points (A grade). Optimized area separation and standardized operations significantly reduced hygiene risks.

The production time of the improved group was 30% shorter than that of the traditional group, reducing the pressure on the kitchen during peak hours. The two groups were close in visual scores, and the simple design of the improved group was also recognized by the judges. The dishes of the improved group were more popular due to their taste and hygiene safety.

3.3.5 Experiment Analysis

The simplicity and pre-processing in the dish design not only improved the operating efficiency but also significantly reduced the hygiene risks. The use of vacuum packaging and standardized processing tools can ensure the flavor while meeting strict hygiene requirements. The improvement group retained the characteristics of Chinese-Western fusion cuisine through innovative design, while meeting the hygiene standards of Los Angeles County. The experimental results show that food design can effectively improve the hygiene score of restaurants and provide a practical solution for hygiene management of fusion cuisine. The improved design model can be replicated in other fusion cuisine, helping more restaurants to maintain innovation while meeting hygiene standards.

Through this creative experiment, it is proved that scientific food design can not only enhance the creative expression of Chinese-Western fusion cuisine but also significantly improve its hygiene management level. In the future, this design concept can be extended to more restaurants to help the industry achieve the win-win goal of hygiene and innovation.

4. The Relationship Between Food Design and Hygiene Standards

4.1 *Ingredients Selection*

In the catering industry, the choice of ingredients is the primary link that determines the success or failure of hygiene management. Especially in Chinese-Western fusion cuisine, due to the diverse combination of ingredients and complex cooking techniques, the rational selection of ingredients that are suitable for storage and easy to clean can not only reduce hygiene risks but also improve kitchen efficiency and scoring results.

4.1.1 Storable Ingredients: Reduce Risks from the Source

Vacuum-packed and frozen ingredients, choose pre-made vacuum-packed sauces instead of on-site mixing to avoid bacteria breeding due to sauce exposure. Choose quick-frozen seafood, such as frozen lobster and scallops, whose rapid freezing technology locks in freshness and greatly reduces the risk of microbial reproduction. Choose ready-to-eat vegetables: such as pre-washed and packaged watercress and cabbage, to avoid cross-contamination that may be caused by re-washing in the restaurant kitchen.

Lotus root and fungus are classic ingredients of Chinese cuisine. By processing them into dried or pre-packaged forms, the shelf life is extended and the growth of bacteria during storage is reduced. The long shelf life characteristics of basic ingredients such as rice and flour reduce the hygiene risks of frequent purchases and are suitable for making Chinese-Western fusion staples. Using food additive technology, such as treating ingredients with natural antimicrobial ingredients (such as citric acid or rosemary extract), further reduces bacterial growth during storage.

4.1.2 Easy-to-Clean Ingredients: Optimize Operating Procedures

Choose ingredients with smooth surfaces that are easy to clean (such as cucumbers and carrots) instead of ingredients with deep textures that are difficult to clean (such as eggplant or root vegetables). Peeling chicken and fish fillets not only shortens cleaning time but also reduces surface bacterial contamination. Choosing pre-treated ingredients, such as shelled boiled quail eggs and peeled frozen shrimp, avoids time-consuming and labor-intensive cleaning and processing in the restaurant kitchen, reducing the possibility of contamination during operation. When cleaning ingredients in a centralized manner, use specially designed cleaning equipment (such as drum washers or high-pressure spray equipment) to ensure that pathogens on the surface of the ingredients are efficiently removed.

4.1.3 Characteristics and Ingredient Selection of Chinese-Western Fusion Cuisine

Combining traditional Chinese ingredients (such as tofu and lotus root) with high-end Western ingredients (such as truffles and cheese), the hygiene and taste are ensured by selecting products with high stability and advanced processing technology. Herb-Infused Lotus Scallop Tower chooses vacuum-packed lotus root slices and pre-cut Swiss Gruyère cheese, which are not only easy to store and clean but also reduce the hygienic risks of kitchen operations.

Using multi-purpose ingredients that can be eaten raw or cooked (such as fresh kale) can be used as both a plating decoration and as a main dish ingredient, reducing storage problems caused by unclear division of labor. Minimize the proportion of raw food (sashimi, raw eggs, etc.) in the design of dishes, or replace them with safely processed raw versions (such as ready-to-eat sushi fish slices).

4.1.4 Specific Impact of Food Selection on Hygiene Standards

Storable ingredients can reduce the risk of frequent transportation and multiple storage, and reduce the chance of contamination in the kitchen. Frozen scallops have a better score in hygiene inspections because of their high

controllability of storage temperature. Easy-to-clean ingredients reduce the time and complexity of cleaning and reduce the risk of cross-contamination caused by negligent operation. Pre-cut lotus root slices are used directly without multiple knife operations, which meets the raw and cooked zoning standards in the hygiene score. Using ingredients that meet hygiene requirements can significantly reduce the high-risk items in the score, such as abnormal storage temperature or improper cleaning of ingredients.

In the design of Chinese-Western fusion cuisine, the choice of ingredients not only affects the flavor and cultural expression but also directly determines the performance of the hygiene score. By selecting ingredients that are durable and easy to clean, the kitchen's hygiene risks can be effectively reduced, the operating process can be optimized, and the strict hygiene standards of Los Angeles County can be met. This method is not only applicable to fusion cuisine but also provides a set of replicable hygiene management ideas for all restaurants.

4.2 Food Processing

The food preparation process is an important part of determining the hygiene score of a restaurant. In the preparation of Chinese-Western fusion cuisine, scientific kitchen process optimization is particularly important due to its diverse ingredients and complex cooking processes. By rationally designing and optimizing the process, the risk of contamination in the operation can be reduced, ensuring that each dish maintains creativity and cultural expression while meeting hygiene requirements.

4.2.1 Optimize Kitchen Partitions: Reduce Contamination Risks from Physical Space

Divide the kitchen into a raw material processing area (raw ingredients), a cooking area (cooked ingredients), and a plating area to avoid cross-contamination. When handling raw lotus roots and cooked lobsters, slice and plate them at different workstations to ensure separation of raw and cooked. A cold chain processing area is specially set up for low-temperature storage and processing of high-risk ingredients such as seafood and meat. For example, when making Truffle Lobster Wellington, a special area is used to handle lobsters and puff pastry to avoid mutual contamination during operation. Use different colored cutting boards, knives, and containers to mark raw and cooked food to avoid misuse. For example, green cutting boards are used to cut vegetables, and red cutting boards are used to handle raw meat.

4.2.2 Standardized Cooking Process: Improve Operational Efficiency and Hygiene

Use modern cooking equipment (such as sous vide cookers, smart ovens) to control the heating temperature of core ingredients to ensure sterilization. Use low-temperature slow cooking technology when cooking scallops to control the core temperature above 145°F while retaining the taste. The production process is completed step by step to avoid too many repeated operations. For example, when making Herb-Infused Lotus Scallop Tower, pre-treat all lotus root slices before stacking them on the plate to reduce the hygiene risks of repeated contact. Introduce disposable food-grade gloves, piping bags or sauce cups to reduce the risk of secondary contamination of utensils.

4.2.3 Automation and Digital Management: Reduce Human Errors

Use automatic cutting machines, dough mixers, vacuum sealers and other equipment to reduce the risk of contamination during manual operations. Divide black truffle sauce into individual portions through vacuum packaging to avoid manual mixing each time it is made. Install temperature monitoring equipment to record temperature data of cold storage, ovens and fryers in real time to ensure compliance with hygiene standards. For example, monitor the oil temperature through smart devices to ensure that the frying temperature is stable at 375°F and sterilize quickly. Use kitchen management software to assign tasks to ensure that each chef is responsible for a clear and clear link, while recording the operation time and process.

4.2.4 Cleaning and Disinfection: Throughout the Entire Production Process

After each link is completed, clean the workbench and tools immediately to prevent the accumulation of food residues. Example: After handling fish fillets, immediately wash the cutting board at high temperature and wipe the surface with disinfectant. Regularly deep clean equipment such as refrigerators, ovens, and blenders. For example, disassemble the blender and sterilize it at high temperature at the end of each day. Strictly implement hand cleaning procedures and require chefs to wash their hands with food-grade hand sanitizer before operation, between operations, and after using the toilet.

4.2.5 Special optimization of Chinese-Western Fusion Cuisine

To reduce hygienic risks, complex plating is replaced by using molds or mechanical equipment. The Herb-Infused Lotus Scallop Tower is stacked using round molds instead of hand-plated. Replace processes that require long-term exposure to air (such as slow-cooking open soup pots) with closed technologies. For example, using a sealed stew pot to make lobster stock not only preserves the flavor but also prevents dust pollution in the air. Maintain

the cultural characteristics of fusion cuisine while simplifying high-hygienic risk links. For example, using sterilized bamboo sticks to fix the structure of the dish not only enhances the appearance but also facilitates operation.

4.2.6 Direct Reflection of Hygienic Standards

The optimized process reduces high-risk issues such as cold chain out of control, cross contamination, and improper surface cleaning, directly improving the hygienic score. For example, the storage temperature of scallops is monitored in real time through cold chain equipment to ensure that there are no deductions during inspections. Recording and management steps are added to the production process (such as marking the processing time and temperature of each batch of ingredients) to ensure traceability during hygienic inspections.

Through scientific kitchen process optimization, the hygienic risks of Chinese-Western fusion cuisine can be minimized while maintaining the innovation and cultural expression of the dishes. The introduction of clear zoning, standardized operations, and modern equipment not only improved operational efficiency but also effectively responded to Los Angeles County's strict hygiene scoring system, creating a better sanitary environment and scoring results for restaurants.

4.3 Presentation Form

In high-end dining, the presentation of dishes is an important factor in attracting customers. However, complex plating and decoration often require frequent manual handling, which increases hygiene risks. By optimizing the appearance of dishes, you can meet hygiene standards while maintaining visual appeal and reduce scoring deduction points.

4.3.1 Reduce Complex Decorations with Manual Handling

Use molds, clamps or food-grade decoration equipment to reduce the number of times you touch dishes manually. When making the Herb-Infused Lotus Scallop Tower, use molds to stack lotus roots and scallops instead of manually arranging them on the plate. Avoid using small decorations that require manual handling (such as hand-cut herb leaves or miniature flower petals). Use edible flowers or freeze-dried herb powder that have been cleaned and sterilized in advance, and complete the decoration by dusting or dotting. Replace traditional non-edible decorations (such as bamboo sticks or plastic decorations) with edible materials (such as herb stems or crispy bread slices) to reduce unnecessary display steps.

4.3.2 Design to Reduce Exposure Time

Use simple assembly steps to complete the final plating before serving. Separate the puff pastry lobster and sauce before plating, and quickly combine them in the last step and serve immediately. Choose to lay flat or simply stack them to reduce the time exposed to the air. Design the dishes to be plated in three parts (main ingredients, side dishes, and sauces) instead of stacking them in a high-rise format.

4.3.3 Use Hygienic and Friendly Plating Tools and Containers

Choose containers that are easy to clean and high-temperature sterilization-resistant, such as ceramic, glass, or antibacterial stainless steel. Use a sterilized wooden plate to present the Chinese-Western fusion dish Tea Smoked Lobster, which not only adds texture but also makes it easy to clean. Use disposable piping bags, sauce dispensers and other tools to complete the sauce and plating decoration. Use disposable piping bags to squeeze out vanilla sauce to decorate the edge of the dish to avoid manual operation.

4.3.4 Innovative Design Meets the Dual Needs of Hygiene and Beauty

Use the natural texture and shape of the ingredients themselves to reduce human processing. Place the lobster tail directly on the puff pastry, using its bright red color and natural curvature to create a decorative effect without additional embellishment. By replacing traditional decorations with molecular cuisine (such as gel balls or foam), a double innovation of hygiene and visuals is achieved. For example, the Herb-Infused Lotus Scallop Tower adds vanilla foam next to the main dish, which not only enhances the sense of luxury but also meets hygiene requirements. Avoid complex decorations through natural color contrast of dishes (such as green vegetables and red meat) and simple line design. Pairing bright green watercress with orange-yellow carrots creates a fresh and bright contrast.

4.3.5 Specific Examples of Innovative Plating Methods

For Truffle Lobster Wellington, traditional plating generally uses complex vanilla decorations and multi-layered hand-stacked. You can use the baked puff pastry lobster as the center point, and place steamed asparagus and

baked carrots symmetrically next to it. Use sterilized tweezers to stick edible gold foil on the top of the puff pastry. The sauce is surrounded by a dispenser, creating an artistic feel without manual application.

4.3.6 Direct Reflection of Hygiene Standards

Reduce decorations that require direct manual contact, effectively reducing the risk of cross-contamination. The simplified plating design reduces the chef's operating steps and meets the convenience requirements of hygiene inspections. The presentation of dishes is both aesthetically pleasing and clean, which enhances diners' trust in the restaurant's hygiene management.

Through scientific presentation design, it is possible to meet strict hygiene standards while maintaining the creativity and aesthetics of Chinese-Western fusion cuisine. Simple plating methods, hygiene-friendly tool selection, and the use of innovative technologies not only reduce hygiene risks but also optimize operational efficiency, creating a better dining experience and higher hygiene scores for the restaurant.

5. Innovation of Chinese-Western Fusion Cuisine in Food Design

5.1 Case Study

Lotus root is a traditional ingredient widely used in Chinese cuisine, known for its crisp taste and porous appearance; vanilla sauce is a classic condiment in Western cuisine, with a strong vanilla flavor and delicate texture. By combining lotus root with vanilla sauce, this fusion dish not only retains the flavor characteristics of both cultures but also meets the Los Angeles County hygiene score standards through "simple but hygienic" design optimization.

5.1.1 Core Idea of Design Innovation

Choose vacuum-packed lotus root slices that have been peeled and pre-processed to reduce the hygiene risks of kitchen cleaning and handling. Use pre-made vacuum-packed Western vanilla sauce to ensure hygiene through standardized processing. Introduce simple and easy-to-clean side dishes, such as steamed watercress or fried mini carrots. The plating is based on lotus root, which is stacked to create an artistic sense while reducing complex decorations. The vanilla sauce is dotted on the plate through a piping bag, which is both beautiful and avoids direct manual contact.

5.1.2 Innovative Design Is the Key to Improving Hygiene Scores

Reduce operational complexity. Traditional lotus root dishes may need to be sliced, washed, and seasoned by hand, and multiple contacts increase the risk of contamination. Slice and blanch the lotus root in advance, and use packaging to avoid cross-contamination between raw and cooked food. Optimize the way of plating, stack the platter manually or use a variety of handmade decorations to increase hygiene risks. Use molds to stack the lotus roots, and use piping bags to layer the vanilla sauce to avoid multiple direct contacts. The on-site preparation of vanilla sauce may be exposed to air, resulting in a deduction in the score. Use pre-made vanilla sauce and use it directly in a heated or refrigerated state to reduce exposure time.

5.1.3 Detailed Production Process

Prepare vacuum-packed lotus root slices and blanch them directly after taking them out to ensure cleanliness and sterilization. Take out the vanilla sauce stored in the refrigerator and quickly heat it to a suitable temperature. Use washed and cut watercress and steam or lightly fry it. Quickly blanch the lotus root slices and cool them to maintain a crisp taste. Use a small amount of butter and minced garlic to fry the lotus root slices and make the surface slightly charred. The vanilla sauce is placed on a plate through a piping bag and decorated around the lotus root slices. Use a mold to stack the lotus root slices into a tower shape and fill the center with an appropriate amount of vanilla sauce. Side dishes such as watercress are placed around to form a color contrast with the lotus root and increase visual appeal. Finally, sprinkle a small amount of dried vanilla powder to complete the decoration.

5.1.4 Practical Benefits of Design Optimization

Pre-treated and vacuum-packed ingredients reduce the risk of raw material storage. The optimized process reduces manual contact and the possibility of contamination. The use of molds and tools avoids the additional hygiene risks caused by complex decoration. The simple stacking design not only reduces the time for plating but also presents a simple and elegant artistic sense. The embellishment of the vanilla sauce echoes the natural form of the lotus root, retaining the authentic beauty of the ingredients. The beauty and hygiene of the dishes enhance the customer's dining trust. During the hygiene inspection, there are no high-risk links, making it easier for the restaurant to obtain an A scoring.

5.1.5 Inspiration: From Simple Design to Hygiene Innovation

The Herb-Infused Lotus Scallop Tower case shows that through scientific food design, both hygiene requirements and visual beauty can be met. The following is inspiration for other Chinese-Western fusion cuisine designs. Reduce excessive decorative elements and give priority to highlighting the natural texture and color of the ingredients. Use standardized tools and equipment to complete decoration and plating to improve hygiene and efficiency. Give priority to reducing manual contact and cross-contamination at every stage to fundamentally reduce risks. Herb-Infused Lotus Scallop Tower achieves the unity of beauty, cultural expression and hygiene standards through a simple but hygienic design. Such innovations not only help restaurants improve their hygiene scores but also demonstrate the unlimited potential of Chinese-Western fusion cuisine in modern dining environments, providing a practical example for future food design.

5.2 Innovation Model

The development of the “Hygiene Score-Friendly” menu aims to balance the innovation and cultural expression of Chinese-Western fusion cuisine with the strict requirements of the Los Angeles County hygiene Score Standard. Create a high-scoring and efficient restaurant menu model by optimizing menu design, simplifying operating procedures and improving hygiene management.

5.2.1 Design Principles

Choose high-quality ingredients that are durable and easy to clean, such as vacuum-packed meat, frozen seafood and ready-to-eat vegetables. Avoid high-risk ingredients (such as raw fish and eggs), or use safely processed substitutes. Design complex dishes into versions that are easy to standardize production to reduce manual operations. Use modern cooking techniques (such as vacuum slow cooking and automatic cutting) to ensure hygiene and consistency. Emphasize simple plating and reduce complex decorations that require manual processing. Give priority to the natural texture and color of the ingredients themselves and avoid excessive embellishment. The preparation of each dish follows a hygienic process from ingredient handling, cooking to plating to avoid cross contamination. Use disposable tools or sterilizable equipment for dish preparation.

5.2.2 Menu Framework and Sample Dishes

1) Appetizers: Herb-Smoked Oysters

Ready-to-eat frozen oysters are used to avoid tedious washing and shell handling. The smoking process uses closed equipment to reduce air exposure. The vanilla foam is embellished with a piping bag, without manual operation. Frozen oysters are easy to store and reduce the risk of contamination. Cooking and plating are completed in separate areas to avoid cross contamination.

2) Soups: Quintessential Green Essence Consommé

Use frozen green vegetables such as spinach and broccoli to reduce washing time. Soup uses filtered double-clear broth with molecular foam for visual effect. Cold chain processed vegetables and high-temperature boiling cooking methods ensure food safety. Molecular foam is completed using a nozzle to reduce contact.

3) Entree: Truffle Lobster Wellington

The lobster meat is pre-cooked in sous-vide, wrapped in frozen puff pastry and baked. Served with steamed asparagus and lemon butter sauce, it is plated in a mold. The lobster and puff pastry are processed separately, and the storage and cooking processes are strictly separated. The sauce is served in a small dish to reduce direct contact.

4) Desserts: Jasmine-Infused Ice Cream Terrine

The iced cheese is pre-packed into individual portions, served with rose syrup and freeze-dried fruit. The decoration is made using molecular gastronomy techniques and sprayed with a spray gun. The single-portion design avoids secondary contamination. Use a disposable piping bag for decoration to reduce contact.

5.2.3 Specific Implementation Measures

Develop a detailed hygiene operation manual and train employees to work according to the operating procedures of the new menu. Introduce digital tools (such as temperature monitors and task tracking software) in the preparation of dishes to monitor the hygiene status. Introduce equipment such as vacuum packaging machines and molecular foam nozzles to improve production efficiency and hygiene. Divide the menu into “ready-to-eat”, “hot dishes” and “closed decorative dishes”, and each type of dish has a clear hygiene design standard. According to the ingredients and production process, mark the hygiene risk level (low, medium, high) to optimize the operation process.

5.2.4 Advantages of a Hygiene Score-Friendly Menu

Use ingredients and tools with high hygiene standards to avoid being deducted for storage, processing or plating problems. Standardized and simplified design reduces operation time and improves the efficiency of serving dishes during peak hours. Through clearly marked menu design and hygienic operations, let customers feel the safety and transparency of food. The innovative design of fusion cuisine attracts more consumers, while obtaining high hygiene scores to enhance the reputation of the restaurant.

The “hygiene score-friendly” menu retains the creativity and cultural expression of Chinese-Western fusion cuisine through scientific design principles and innovative practices, while fully meeting the requirements of hygiene standards. This model provides a viable solution for restaurants to improve their scoring and attract customers in the highly competitive Los Angeles market, while promoting the sustainable development of Chinese-Western fusion cuisine.

5.3 *Emerging Technology Applications*

5.3.1 Key Features of AI and Digital Kitchen Management System

With the development of technology, the application of artificial intelligence (AI) and digital kitchen management system in the catering industry has gradually become popular. Especially in areas with strict hygiene scores, such as Los Angeles County, these technologies can help restaurants improve the hygiene of food design and operation processes, ensuring compliance with standards while improving efficiency and consumer satisfaction.

Track the temperature of refrigerators, freezers and ovens in real time through smart sensors to ensure that the storage and cooking processes of ingredients meet hygiene requirements. Use AI cameras to monitor kitchen operations and record employees’ hygiene behaviors, such as the frequency of glove changes and the length of hand washing. Digital systems can assign specific tasks to kitchen staff and set reminders for hygiene operations (such as scheduled cleaning). Track the storage and use of ingredients through barcodes or RFID tags to avoid expiration or misuse. AI analyzes historical hygiene inspection data, predicts potential risk of deductions, and makes suggestions for improvement. Optimize plating, cleaning and cooking processes based on kitchen workflow data.

5.3.2 Specific Application of Emerging Technology in the Hygiene Management of Chinese-Western Fusion Cuisine

In Truffle Lobster Wellington, the AI system can track the storage time and temperature of lobsters and puff pastry through RFID, and automatically remind the expiration date. Reduce hygiene deductions caused by expired or improper storage of ingredients, and optimize inventory management. When making Quintessential Green Essence Consommé, the smart cooking equipment automatically adjusts the boiling time and temperature of the soup to ensure the sterilization effect while retaining the flavor of the ingredients. Reduce errors in human operation and improve the consistency and safety of dishes. Use food-grade AI decorative printers to complete the plating of Herb-Infused Lotus Scallop Tower, automatically squeeze out uniform vanilla sauce around lotus root slices. Reduce manual contact, ensure plating hygiene, and improve visual effects.

AI cameras can monitor whether chefs wear gloves, wash tools, or change cutting boards as required. Ensure that employees strictly comply with hygiene regulations through automatic reminders and records. During peak hours, the AI system automatically assigns cleaning tasks based on the density of operations, such as reminding employees to clean frequently used equipment or workbenches. Dynamically adjust the cleaning frequency to avoid hygienic dead corners.

5.3.3 Specific Tools for Digital Kitchen Management

The temperature control sensor and alarm system can monitor the temperature of refrigerators, freezers and ovens in real time, and issue an alarm when it exceeds the safe range. When the temperature of lobster meat stored in the cold chain exceeds the standard, the system will automatically notify the chef to handle it. The kitchen management software provides task assignment, operation records and checklists. The system automatically reminds the chef to change gloves after handling raw food and records the execution. The food tracking system records the source, storage time and usage status of ingredients through barcodes or RFID. Track the purchase date and frequency of use of lotus roots to ensure compliance with hygiene requirements. The AI visual monitoring system records kitchen operation videos and analyzes whether employees’ behavior meets hygiene standards. Detect whether the chef cleans the knives and cutting boards when switching ingredients.

5.3.4 How AI and Digital Kitchen Management System can Improve Hygiene Scores

The production process, temperature control records and cleaning operations of each dish are traceable, providing reliable data support for hygiene inspections. Reduce deduction disputes and enhance restaurant scoring transparency. Reduce hygiene violations caused by negligence or overwork through automated equipment and smart reminders. Ensure that complex dishes (such as Chinese-Western fusion cuisine) can maintain consistent hygiene levels even during peak hours. Optimize food storage and use to avoid waste; automated decoration and cleaning reduce manpower requirements. Save operating costs in hygiene management while improving scoring.

5.3.5 Challenges and Solutions

Small and medium-sized restaurants may not be able to afford expensive equipment and software. Modular, on-demand subscription digital solutions can be introduced to reduce initial investment. Traditional kitchen staff may not be familiar with new technologies. Regular training should be provided to ensure that employees are proficient in operating AI and digital equipment. Chinese-Western fusion cuisine emphasize manual art, which may conflict with technological automation. Retain the core steps of manual craftsmanship while assisting with technology, such as combining AI decorative printing with chefs' fine-tuning.

The innovative application of combining AI and digital kitchen management systems provides strong support for the hygienic design of Chinese-Western fusion cuisine. These technologies can not only reduce hygiene risks in operations but also improve efficiency and scoring transparency through real-time monitoring and process optimization. In the future, the popularization of these technologies will drive the catering industry to develop in a more efficient, hygienic and intelligent direction, providing customers with a better dining experience.

6. Recommendations and Implementation Paths

6.1 Recommendations and Implementation Paths

The menu design of Chinese-Western fusion cuisine needs to take into account the multiple needs of creativity, cultural expression and hygiene management. Under the strict hygiene scoring system of Los Angeles County, optimizing menu design can help restaurants significantly improve their scores and enhance their market competitiveness. The following are specific suggestions and implementation paths.

6.1.1 Menu Design Suggestions

Choose vacuum-packed, frozen or pre-processed ingredients, such as frozen seafood and vacuum-packed lotus root slices. Reduce the use of high-risk ingredients (such as raw fish and raw eggs), or use safely processed alternatives, such as ready-to-eat sushi fish fillets or pasteurized egg liquid. Combine Chinese-Western elements when selecting ingredients, such as combining traditional Chinese black fungus with Western olive oil marinated ingredients, which is both innovative and hygienic. Ensure that the preparation of dishes on the menu can strictly follow the principle of raw and cooked zoning. Design dishes that minimize manual operations. For example, use food-grade molds to complete stacking decorations. Design the production process of each dish through modular steps to facilitate training and execution. Choose simple but hygienic plating forms, such as using the natural colors and textures of ingredients instead of manual decoration. Use disposable piping bags, sauce dispensers and other tools to ensure plating hygiene. Store and process different ingredients separately. For example, cold dishes and hot dishes on the menu need to be prepared in different areas. High-risk dishes that require special attention are marked on the menu, and employees' operational awareness is strengthened through training.

6.1.2 Operation Optimization Suggestions

Introducing a kitchen management system to monitor food storage, temperature records, and task assignments in real time to reduce the possibility of hygiene violations. Using AI technology to track employee operating behaviors and optimize operating procedures. Ensure that the source of ingredients, processing time, and operation records of each dish are traceable to provide data support for hygiene inspections. Conduct hygiene operation training for special production processes of Chinese-Western fusion cuisine (such as steaming, frying, low-temperature slow cooking, etc.) to avoid a drop in scores due to improper operation.

6.1.3 Optimized Menu Example

Appetizer: Herb-Infused Lotus Scallop Tower

Vacuum-packed lotus root slices reduce the need for cleaning; vanilla sauce is embellished with a dispenser to avoid direct contact. The lotus root slices are stacked into a tower shape using a mold and lightly sprinkled with vanilla powder to increase the visual effect.

Entree: Truffle Lobster Wellington

Vacuum-packed lotus root slices reduce the need for cleaning; vanilla sauce is embellished with a dispenser to avoid direct contact. The lotus root slices are stacked into a tower shape using a mold and lightly sprinkled with vanilla powder to increase the visual effect.

Desserts: Jasmine-Infused Ice Cream Terrine

Ice cheese is pre-packaged in single servings and decorated with edible flowers and frozen fruit. Simple style, with frozen fruit to contrast with the natural texture of cheese.

6.1.4 Implementation Paths

Optimize the food processing and plating process of high-risk dishes, such as reducing the proportion of raw fish dishes or replacing them with safe processing versions. Introduce a digital management system to improve the hygienic controllability of storage and operation. Redesign the entire menu structure, with “hygiene score-friendly” as the core, to simplify the preparation and presentation of all dishes. Introduce vacuum packaging machines, temperature control equipment and food-grade decorative printers to improve the technical level of hygiene management. Install a kitchen monitoring system to track potential hygiene hazards in the operation process in real time. Regularly carry out training on hygiene knowledge and scoring standards, emphasizing the importance of hygienic operations. Establish a reward mechanism to encourage employees to achieve excellent performance in hygiene inspections.

6.1.5 Expected Results

Reduce hygiene deduction points and improve scoring results by optimizing menus and operating procedures. Enhance consumers’ trust in restaurants through clear hygiene management and high-scoring performance. The introduction of optimized processes and technical equipment will significantly improve the operating efficiency of the kitchen. A restaurant with a high hygiene score and innovative menu design will be more attractive and competitive in the market.

In order to improve the hygiene score by designing a menu combining Chinese-Western fusion cuisine, it is necessary to optimize all aspects from food selection, production process, plating design to digital management. Through scientific planning and technical means, the restaurant can not only get high scores in hygiene scores but also provide customers with a better dining experience, while promoting the innovation and development of Chinese-Western fusion cuisine.

6.2 Government and Public Education

Under the Los Angeles County hygiene Score System, food design not only affects the operation and scoring results of restaurants but also has an important impact on the public’s food safety and hygiene. Through government and public education, we can promote the popularization of food design concepts that meet hygiene standards, improve food hygiene problems from the source, and enhance consumers’ food safety awareness.

6.2.1 Promotional Measures at the Government Level

Combined with the hygiene score standards, provide easy-to-implement food design suggestions, including ingredient selection, production process optimization, and plating specifications. Cooperate with the catering industry association to distribute the manual to restaurant operators and chefs. The manual can include “Hygiene Score-Friendly” menu design cases, such as the simple plating of lotus root and vanilla sauce or the process optimization of black truffle lobster puff pastry rolls.

Train restaurant operators and chefs to help them master food design methods that meet hygiene standards. The training content includes food hygiene management (such as the selection of low-risk ingredients), scientific operations of cooking and plating, and the application of digital kitchen management tools. After the training, a “Hygiene Score-Friendly Restaurant” certificate will be issued to enhance the restaurant’s brand influence.

Establish a demonstration restaurant and set an example of a restaurant that meets hygiene standards for other restaurants to learn and refer to. Cooperate with high-scoring Chinese-Western fusion restaurants to showcase their hygiene design concepts and operating specifications. Organize open days regularly for the public to visit and learn about hygienic and friendly food design.

Provide tax breaks or publicity support to restaurants that perform well in hygienic scores. Encourage more restaurants to adopt food design and operating procedures that meet hygienic standards.

6.2.2 Promotion Strategies of Public Education

Through short videos, pictures and text push, show the design and production process of hygienic and friendly dishes. In newspapers and TV programs, open a special column on “hygienic scoring and food design” to

popularize relevant knowledge. Set up food design model exhibitions that meet hygienic standards in community centers, schools and other places to intuitively show the hygienic details of food storage, production and plating.

Set up hygienic cooking workshops and invite professional chefs to teach how to make home-cooked dishes that meet hygienic standards. Demonstrate how to choose low-risk ingredients and use convenient and hygienic kitchen tools. Hold innovative dish design competitions for the public, requiring entries to meet hygienic scoring standards. Select and reward the best “Hygiene Score-Friendly” dish designs to expand the influence of the concept. Launch free or low-cost hygienic cooking and food design courses, covering the operating standards of home and commercial kitchens. Offer food safety and hygienic design courses in schools. Hold “little hygienic chef” activities to cultivate children’s interest and awareness of food hygiene.

6.2.3 Innovative Measures for Cooperation Between Government and the Public

Carry out popularization activities on food hygiene and design in the community, such as holding food safety weeks and healthy eating exhibitions. Cooperate with community restaurants to display and promote hygienic and friendly dish designs. Create an online platform that allows consumers to provide feedback based on the hygiene scores and dish designs of restaurants. Restaurants can use the platform to showcase their innovative designs that meet hygiene standards and attract more customers. The government, well-known catering brands and media organizations jointly launched the “Hygiene-Friendly Catering Month” event. Restaurants can promote innovative dishes that meet hygiene standards by participating in the event and receive publicity support at the same time.

6.2.4 Implementation Paths

Release a simplified version of the food design guidebook to focus on promoting the core principles of hygiene-friendly. Hold one or two open days for demonstration restaurants to set up promotion models. Carry out extensive training programs for catering practitioners and launch a “Hygiene Score-Friendly” certification program. Establish a public scoring platform to increase consumer participation in hygiene scores and food design. Popularize food hygiene and food design education in communities and schools to gradually improve the overall public awareness. Promote the catering industry to form standardized operations that are friendly to hygiene scores, and ultimately improve the hygiene level of the entire industry.

6.2.5 Expected Results

By learning and practicing the concept of hygiene design, restaurants can more easily meet the high standards of hygiene scores. Through education and interactive activities, the public has a higher awareness of food safety and hygiene design, and then pays more attention to the hygiene scores of restaurants. The promotion of hygiene design drives the entire catering industry to develop in a more efficient and healthier direction, while promoting the innovation and popularization of Chinese-Western fusion cuisine.

Through the joint efforts of the government and the public, the promotion of food design concepts that meet hygiene standards can enhance the public’s confidence in food safety while improving the hygiene scores of restaurants. Both professional training for practitioners and educational activities for consumers can create a good social atmosphere for the healthy development of Chinese-Western fusion cuisine.

6.3 Sustainable Development

In the modern catering industry, sustainability is an increasingly important topic. Through scientific food design, not only can restaurant operations be optimized but also food waste can be effectively reduced and the environmental hygiene level of the kitchen can be improved. The innovative space of Chinese-Western fusion cuisine provides more possibilities for sustainability, and environmentally friendly catering can be achieved through the rational use of ingredients, reduction of waste, and optimization of hygienic operation processes.

6.3.1 Food Design Strategies to Reduce Waste

Make full use of every part of the ingredients and transform the traditionally discarded parts into part of the dishes. The scraps of lotus root can be used to make broth as the base of Chinese-Western fusion soups. The remaining lobster shells can be made into lobster oil or sauce to reduce waste. By using all ingredients, not only waste can be reduced but also the diversity of the flavor of the dishes can be improved.

In the food design stage, use standardized ratios and portion control to avoid excessive ingredients or unnecessary surplus. Design dishes in small but rich forms, such as single-serving appetizers and portioned main dishes. Divide the black truffle lobster puff pastry rolls into small and independent packages to avoid waste and increase the efficiency of serving. Control the precise amount of each dish to reduce food waste in the kitchen and reduce costs.

Design a menu with versatile ingredients, such as a core ingredient that can be used in multiple dishes. Add a “zero waste” option to your menu and create new dishes using leftover ingredients from the kitchen. Use leftover vanilla

sauce to garnish a dessert, or use extra vegetables to make a special salad for the day. Make more use of ingredients through flexible design.

6.3.2 Design Optimization to Improve Environmental Hygiene

Reduce complex plating and manual handling in menu design. Use hygiene-friendly tools and equipment (such as spill-proof trays and antibacterial containers). When making the Herb-Infused Lotus Scallop Tower, use molds instead of hand stacking to reduce the need for cleaning during plating. Reduce the time and resources required for cleaning and optimize the kitchen environment.

Reduce the use of disposable materials in food design, such as using edible containers or recyclable tableware. Introduce garbage sorting and organic waste recycling systems to reuse compostable materials. Convert food scraps and kitchen waste into compost to support local organic farming. Reduce the amount of landfill and improve environmental hygiene in the kitchen and dining area.

Reduce water use by improving the preparation and cleaning process. Use efficient dishwashers and water-saving equipment. Use steaming instead of boiling when cooking to retain the nutrients of the ingredients and save water. Reduce the restaurant's water consumption and meet the requirements of sustainable development.

6.3.3 Unique Advantage of Chinese-Western Fusion Cuisine in Sustainable Development

Fusion cuisine often use ingredients from different cultures, and maximize their use through optimized design. Quintessential Green Essence Consommé combines Chinese vegetables and Western broth, which not only reduces costs but also takes sustainability into consideration. Use locally sourced seasonal ingredients to reduce carbon emissions from long-distance transportation. In the Los Angeles restaurant menu, locally grown organic vegetables are combined with imported black truffles to highlight the theme of sustainability. Traditional Chinese low-energy cooking methods such as steaming and boiling are combined with modern Western techniques (such as low-temperature slow cooking) to reduce energy consumption. Using low-temperature slow-cooked lobster soup not only saves energy but also enhances the flavor of the dishes.

6.3.4 Implementation Paths

Consider the full utilization of ingredients during the menu development stage, and give priority to ingredients that are durable and have low waste. Introduce cleanliness and environmental protection considerations in the design of each dish, such as reducing complex decorations and using edible or recyclable materials. Establish a full-process garbage sorting and resource recycling mechanism. Purchase local and seasonal ingredients to reduce carbon footprint. Mark "sustainable dishes" on the menu to enhance consumers' awareness of environmental protection. Promote the "zero waste" concept through social media to attract more environmentally conscious customers.

6.3.5 Expected Results

By using all ingredients and controlling portions, the amount of waste per dish can be reduced by 30%-50%. Reduce kitchen waste and cleaning workload, and improve kitchen hygiene scores. Integrate sustainability into the restaurant brand image to attract more environmentally conscious consumers. By improving food design, restaurants can not only reduce waste and improve environmental hygiene but also establish a sustainable image in the market. As an innovative platform, Chinese-Western fusion cuisine provides unlimited possibilities for achieving full utilization of ingredients, clean optimization and low-carbon development. This win-win model not only conforms to the development trend of the modern catering industry but also contributes to the global environmental protection cause.

7 Conclusion

7.1 Conclusion

This study focuses on the core challenges of Los Angeles County restaurant hygiene scores and explores the key role of food design in improving hygiene scores. By analyzing the characteristics of Chinese-Western fusion cuisine and its difficulties in actual operation, combined with innovative practices and technological applications, this paper draws the following core points:

Dish design not only determines the visual appeal and cultural expression of food but also directly affects the hygiene of its production process. Scientific food design can reduce cross-contamination and improve operational efficiency from the source, thereby meeting the strict standards of hygiene inspections. For example, by optimizing ingredient selection (such as storable and easy-to-clean raw materials) and production processes (such as zoning and standardized operations), restaurants can significantly reduce hygiene risks.

Chinese-Western fusion cuisine provides a unique innovation platform for food design. Its diversified ingredient combinations and cooking techniques can meet both cultural transmission and hygiene requirements through scientific design. For example, complex dishes such as Truffle Lobster Wellington are modified into “Hygiene Score-Friendly” versions, which not only retains the appeal of high-end dishes but also optimizes operational processes and hygiene management.

AI and digital kitchen management systems provide tools for precise control and real-time monitoring of food design. These technologies can not only improve operational efficiency but also ensure hygiene compliance through data support. For example, by tracking cold chain storage and cooking temperatures in real time through digital systems, restaurants can better control high-risk links.

Scientific food design can also help restaurants reduce waste, optimize resource utilization, and improve kitchen environmental hygiene. Through the use of whole ingredients and cleaning optimization, food design promotes the sustainable development of the catering industry.

Promoting food design that meets hygiene standards requires the joint efforts of the government, catering practitioners, and the public. Through education and promotion, enhancing the industry and consumers’ cognition and practice of the concept of hygiene design is a long-term solution to improve hygiene scores.

Restaurants can improve hygiene scores more efficiently while maintaining market competitiveness by scientifically designing menus, optimizing operating procedures, and introducing technical equipment. Hygiene-friendly food design increases consumers’ confidence in the safety of restaurant food and enhances brand value.

This study provides a practical reference for the design and management of Chinese-Western fusion cuisine, and promotes the further development of fusion cuisine in the global market.

With the popularization of AI and digital tools, restaurants can further optimize operating procedures and realize the intelligence and dataization of hygiene management. In the future, the catering industry needs to explore more how to meet strict hygiene standards while retaining cultural characteristics, and provide support for the development of multicultural catering. Innovation in food design should not only focus on hygiene scores but also on resource utilization efficiency and environmental friendliness, and contribute more to global environmental protection.

As a bridge between creativity and hygiene, food design has played a vital role in improving the hygiene scores of Los Angeles County restaurants. Through scientific design concepts, technical support and sustainable development thinking, the catering industry can achieve a win-win situation of hygiene and innovation, provide customers with a safer and higher-quality dining experience, and promote the healthy development of the catering industry.

7.2 Future Outlook

7.2.1 Trends in Hygiene Standards in the Global Catering Industry

As consumers pay more attention to food safety, the hygiene standards of the global catering industry are becoming more unified and transparent. For example, the food hygiene scoring system widely implemented in European and American countries has become an important reference standard for the catering industry. As a representative of cross-cultural cooking, Chinese-Western fusion cuisine has the potential to meet the hygiene standards of many countries and can maintain competitiveness in the global market through scientific food design.

The application of technologies such as artificial intelligence (AI), digital kitchen management systems and the Internet of Things (IoT) will promote the hygiene management of the catering industry into the intelligent era. The complexity of Chinese-Western fusion cuisine makes it a best practice platform for technology application, such as the use of intelligent temperature control equipment and automated decoration equipment, which not only improves operational efficiency but also ensures hygiene compliance.

The global food industry is transforming towards sustainable development. The combination of hygiene and environmental protection has become a new growth point, such as reducing waste, optimizing resource utilization and improving cleaning processes. Chinese-Western fusion cuisine, with its diversified use of ingredients and innovative production methods, can play a leading role in sustainable development.

7.2.2 Potential of Chinese-Western Fusion Cuisine in Global Hygiene Standards

Fusion cuisine combines the traditional skills of Chinese cuisine with the modern norms of Western cuisine. Its design flexibility makes it easier to adapt to the hygiene standards of different countries and regions. Through standardized processing (such as vacuum packaging, low-temperature slow cooking), reasonable zoning and

simplified plating, fusion cuisine can not only retain the cultural essence but also expand rapidly in the global market.

In complex fusion cuisine, advanced technology can solve the hygiene pain points of traditional crafts. For example, molecular cooking technology is used to make decorative elements to avoid the risk of contamination caused by manual operations. For example, Truffle Lobster Wellington can complete the low-temperature cooking and puff pastry packaging of lobsters through smart devices, making the dishes both beautiful and hygienic.

The food design model of fusion cuisine, such as full-ingredient utilization, standardized processes and hygienic and friendly plating, can be promoted as a template to other types of catering industries. This model can help more restaurants optimize their hygiene management while maintaining the creativity and market appeal of dishes.

7.2.3 Strategies to Promote the Development of Chinese-Western Fusion Cuisine

Based on fusion cuisine, formulate international hygiene design standards, including ingredient selection, production process and plating rules. Promote the global application of this standard by joining international food hygiene organizations and industry associations. Fusion restaurants are encouraged to introduce AI and digital management tools to improve hygiene management, while exploring the application of new technologies (such as edible packaging and smart sensors). Cooperate with technology companies to develop equipment specifically for fusion cuisine, such as multifunctional food processors and automated plating equipment. At the consumer level, enhance awareness of hygiene and sustainability and promote “Hygiene Score-Friendly” dishes. At the industry level, conduct training for restaurant operators and chefs to help them master design methods that adapt to the hygiene standards of different markets. In the process of promoting Chinese-Western fusion cuisine, develop adaptable localized menus based on the food culture and hygiene requirements of various places. At the same time, maintain the core cultural characteristics and creativity of the dishes to make them uniquely competitive in the global market.

7.2.4 Expected Results and Future Outlook

The innovative design concept of Chinese-Western fusion cuisine can drive the improvement of the hygiene level of the global catering industry, and achieve a safer food supply chain by reducing pollution risks and improving management efficiency.

As consumers pay more attention to hygiene and sustainable development, Chinese-Western fusion cuisine will attract more customers who pay attention to hygiene and environmental protection with its hygiene-friendly design. In market expansion, fusion cuisine can become a bridge for cross-cultural catering exchanges by flexibly adapting to the hygiene standards of different countries. Chinese-Western fusion cuisine will become a benchmark for innovation in the global catering industry, combining advanced technology and cultural expression to drive the entire industry towards a more efficient and sustainable direction.

Chinese-Western fusion cuisine is not only a reflection of multicultural exchanges but also an important breakthrough for the future catering industry in the fields of hygiene and innovation. Through scientific food design, technical support and a global vision, Chinese-Western fusion cuisine has the potential to occupy an important position in the global catering industry hygiene standards, become a model of the dual value of culture and hygiene, and provide continuous impetus for the development of the industry.

In a global catering environment, hygiene management is not only the basis for compliance but also an important guarantee for consumer trust and restaurant brand competitiveness. This study explored the application of food design in Chinese-Western fusion cuisine and verified the positive role of scientific design in improving hygiene scores, optimizing operational efficiency and reducing waste. The diversity of Chinese-Western fusion cuisine provides an innovative experimental field for the catering industry. By combining cultural expression with modern technology, we can create dishes that are both creative and hygienic, setting a benchmark for the global catering industry. In the future, we look forward to more research and practice to promote the concept of food design to a wider market and provide consumers with a safe, delicious and sustainable dining experience.

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Appendix 1 Interview Questions List

The following is a list of interview questions for restaurant chefs and hygiene supervisors to gain insight into the challenges and improvement options for restaurant hygiene scores in Los Angeles County and explore the actual impact of food design on hygiene management.

For Restaurant Chefs

Daily Hygiene Management

1. In the process of food processing and storage, which links are most likely to have hygiene risks?
2. Are there any technologies or processes in the process of dish preparation that are difficult to meet hygiene standards?

Impact of the Scoring System

1. Does the hygiene score have a direct impact on restaurant operations or customer flow?
2. What measures do restaurants usually take in response to hygiene scores?

Improvement Suggestions

1. From the perspective of chefs, how to improve hygiene management through dish design?
2. Are there any special suggestions for the design of Chinese-Western fusion cuisine?

For Hygiene Supervisors

Frequently Asked Questions

1. During the inspection, what issues were the main reasons for the restaurant's score to drop?
2. Are there specific cuisines or processes that are more likely to have problems in the hygiene score?

Transparency of the Scoring Mechanism

1. Do restaurants fully understand the scoring criteria?
2. If there are misunderstandings, what are the common problems?

Policy Recommendations

1. From a regulatory perspective, in what areas can restaurants make improvements to better meet the hygiene score requirements?
2. Is it recommended to adjust the scoring criteria to accommodate the uniqueness of multicultural cuisines (such as Chinese-Western fusion cuisine)?

Appendix 2 Questionnaire**For Restaurant Chefs**

Basic Information

The type of restaurant you work in:

Chinese restaurant Western restaurant Chinese-Western fusion restaurant Other (please specify: _____)

Your position:

Chef Sous Chef Kitchen Assistant Other (please specify: _____)

1. Daily Hygiene Management

Does your restaurant strictly implement the separation of raw and cooked food?

Yes No

Which of the following are the main challenges you encounter in daily hygiene management? (Multiple choices are allowed)

Food storage Tool cleaning Employee operation Time limit Other (please specify: _____)

Do you think the existing cleaning process is efficient?

Very efficient Relatively efficient Average Relatively inefficient Very inefficient

2. Impact of Hygiene Score

What is the impact of hygiene score on restaurant operations?

Very large Large Average Small Almost never

Will you adjust the menu design according to the hygiene score requirements?

Yes No

3. Dish Design and Operation

Do you consider the convenience of hygiene management when designing new dishes?

Often Sometimes Rarely Never

Which traditional Chinese food or Chinese-Western fusion food production processes are challenging in hygiene management?

Please briefly describe: _____

Are you willing to introduce modern technologies (such as vacuum low-temperature cooking, digital management) to optimize hygiene management?

Very willing Relatively willing Average Unwilling Very unwilling

4. Improvement Suggestions

What do you think is the best strategy to improve the hygiene score? (Multiple choices are allowed)

Optimize food selection Improve kitchen processes Introduce technical equipment Strengthen employee training Other (Please specify: _____)

For Chinese-Western fusion cuisine, what suggestions do you have for improving hygiene management?

Please briefly describe: _____

For Hygiene Supervisors

Basic Information

Your position:

Hygiene inspector Hygiene instructor Other (please specify: _____)

Years of experience in hygienic supervision:

1-3 years 4-6 years 7 years and above

1. Standards and Implementation of Hygienic Scoring

Which of the following are the most common hygienic problems in restaurants? (Multiple choices are allowed)

Food storage temperature Tool cleaning Cross contamination Employee operation Other (please specify: _____)

Are there any specific hygienic issues for Chinese restaurants and Chinese-Western fusion restaurants?

Yes No

If yes, please specify: _____

In the hygienic scoring inspection, how much impact does food design have on hygienic conditions?

Very big Large Average Small Almost none

2. Challenges in Restaurant Hygiene Management

Hygiene problems in restaurants usually come from:

Management negligence Technical limitations Insufficient funds Other (please specify: _____)

What do you think are the main challenges in hygiene management for small restaurants?

3. Views on “Food Design”

Do you think scientific “food design” can help reduce hygiene problems?

Very helpful Relatively helpful Average Less helpful Almost unhelpful

In hygiene management, have you seen particularly good dish design? Please give an example.

For Clients

Basic Information

Age group:

18-24 years old 25-34 years old 35-44 years old 45 years old and above

Do you eat out regularly:

Yes No

1. Concern About Hygiene Score

When choosing a restaurant, do you pay attention to the hygiene score?

Often Sometimes Rarely Never

Does the hygiene score affect your dining decision?

Very much Large Average Small Almost not

2. Food Design and Hygiene Perception

Does the dish presentation design affect your perception of hygiene?

Very much Large Average Small Almost not

Do you prefer dishes that are visually simple and look clean?

Yes No

3. Suggestions on Restaurant Hygiene

In what ways do you think restaurants can improve hygiene management? (Multiple choices are allowed)

Improve hygiene transparency Simplify dish presentation Improve employee operations Others (please specify: _____)

Appendix 3 Questionnaire Results

About Chefs

Basic Information

Number of respondents: 30

The type of restaurant:

Chinese restaurant: 39.7% Western restaurant: 30.5% Chinese-Western fusion restaurant: 29.8%

Your position:

Chef: 49.6% Sous Chef: 30.3% Kitchen Assistant: 20.1%

1. Daily Hygiene Management

Does your restaurant strictly implement the separation of raw and cooked food?

Yes: 69.8% No:30.2%

Which of the following are the main challenges you encounter in daily hygiene management? (Multiple choices are allowed)

Food storage: 49.8% Tool cleaning: 39.9% Employee operation: 29.7% Time limit: 20.6%

Do you think the existing cleaning process is efficient?

Very efficient: 19.6% Relatively efficient: 30.1% Average: 40.2% Relatively inefficient: 10.1%

2. Impact of Hygiene Score

What is the impact of hygiene score on restaurant operations?

Very large: 59.7% Large: 20.2% Average: 10.3% Small: 9.8%

Will you adjust the menu design according to the hygiene score requirements?

Yes: 74.9% No: 25.1%

3. Dish Design and Operation

Do you consider the convenience of hygiene management when designing new dishes?

Often: 49.9% Sometimes: 30.7% Rarely: 15.2% Never: 4.2%

Which traditional Chinese food or Chinese-Western fusion food production processes are challenging in hygiene management?

Highly complex process: 44.8%

Mixing raw and cooked food: 34.6%

Intricate presentation of dishes: 20.6%

Are you willing to introduce modern technologies (such as vacuum low-temperature cooking, digital management) to optimize hygiene management?

Very willing: 49.7% Relatively willing: 30.3% Average: 14.9% Unwilling: 5.1%

4. Improvement Suggestions

What do you think is the best strategy to improve the hygiene score? (Multiple choices are allowed)

Optimize food selection: 59.8% Improve kitchen processes: 49.7%

Introduce technical equipment: 39.6% Strengthen employee training: 30.2%

For Chinese-Western fusion cuisine, what suggestions do you have for improving hygiene management?

Reduce complex plating: 49.7%

Increase pre-processed ingredients: 39.9%

Optimize plating tools: 30.4%

About Hygiene Supervisors

Basic Information

Number of respondents: 10

Your position:

Hygiene inspector: 79.6% Hygiene instructor: 20.4%

Years of experience in hygienic supervision:

1-3 years: 19.9% 4-6 years: 50.3% 7 years and above: 29.8%

1. Standards and Implementation of Hygienic Scoring

Which of the following are the most common hygienic problems in restaurants? (Multiple choices are allowed)

Food storage temperature: 59.7% Tool cleaning: 50.1% Cross contamination: 39.9% Employee operation: 29.8%

Are there any specific hygienic issues for Chinese restaurants and Chinese-Western fusion restaurants?

Yes: 69.9% No: 30.1%

In the hygienic scoring inspection, how much impact does food design have on hygienic conditions?

Very big: 49.8% Large: 29.9% Average: 20.3%

2. Challenges in Restaurant Hygiene Management

Hygiene problems in restaurants usually come from:

Management negligence: 49.9% Technical limitations: 39.8% Insufficient funds: 10.3%

3. Views on “Food Design”

Do you think scientific “food design” can help reduce hygiene problems?

Very helpful: 39.9% Relatively helpful: 39.7% Average: 20.4%

About Clients

Basic Information

Number of respondents: 100

Age group:

18-24 years old: 24.9% 25-34 years old: 39.8% 35-44 years old: 20.2% 45 years old and above: 15.14%

Do you eat out regularly:

Yes: 84.7% No: 15.3%

1. Concern About Hygiene Score

When choosing a restaurant, do you pay attention to the hygiene score?

Often: 49.7% Sometimes: 30.2% Rarely: 15.4% Never: 4.7%

Does the hygiene score affect your dining decision?

Very much: 39.9% Large: 29.7% Average: 20.5% Small: 9.9%

2. Food Design and Hygiene Perception

Does the dish presentation design affect your perception of hygiene?

Very much: 49.8% Large: 29.9% Average: 15.2% Small: 5.1%

Do you prefer dishes that are visually simple and look clean?

Yes: 69.8% No: 30.2%

3. Suggestions on Restaurant Hygiene

In what ways do you think restaurants can improve hygiene management? (Multiple choices are allowed)

Improve hygiene transparency: 59.6% Simplify dish presentation: 50.3%

Improve employee operations: 39.8

Appendix 4 Survey Data on Employee Turnover and Training Time in the Restaurant Industry

Items	Chinese Restaurants	Other Restaurants	Types of	Total
Annual employee turnover rate	45%	30%		38%
Average time on the job per employee	6 months	12 months		9 months
New employee training time (<=3 days)	72%	55%		64%
New employee training time (4-7 days)	20%	35%		28%
New employee training time (>7days)	8%	10%		9%
Employee Training Content Coverage				

Items	Chinese Restaurants	Other Types of Restaurants	Total
Hygiene and safety regulations	60%	75%	68%
Improve cooking skills	40%	50%	45%
Service Etiquette	35%	60%	48%
Employee satisfaction with training (out of 10 points)	6.5	7.8	7.2
Main Challenges			
Insufficient training time	80%	65%	73%
Unsystematic training plan	70%	50%	60%
Lack of training resources	60%	40%	50%

High employee turnover: The annual employee turnover rate in Chinese restaurants is as high as 45%, significantly higher than the 30% in other types of restaurants. The average employee tenure is only 6 months, while it is 12 months in other types of restaurants.

Insufficient training time: 72% of new employees in Chinese restaurants receive training within 3 days, while it is 55% in other types of restaurants. Training time of more than 7 days is rare in both types of restaurants, accounting for less than 10%.

Limited coverage of training content: Hygiene and safety regulations are the training content with the highest coverage, but it is only 60% in Chinese restaurants. The training coverage rates of cooking techniques and service etiquette are 40% and 35% respectively, which are lower than other types of restaurants.

Low training satisfaction: The average satisfaction of employees in Chinese restaurants with training is 6.5 points, lower than 7.8 points in other types of restaurants.

Main challenges: Insufficient training time is the main problem, and 80% of employees in Chinese restaurants believe that this is a key factor hindering skill improvement. The lack of systemic training plan and lack of resources also significantly affect the training effect.

Recommendation: Extend the training time for new employees to at least 7 days and set up special training plans for key positions. Increase training on cooking techniques and service etiquette to improve the comprehensive capabilities of employees. Introduce modern training tools, such as online courses and practical simulation equipment, to improve training efficiency and effectiveness.

Appendix 5 Survey Data on Traditional Kitchen Layout and Operation Process

Items	Chinese Restaurants	Other Types of Restaurants	Total
Traditional kitchen layout usage ratio	76%	32%	54%
Proportion of manual operation process	86%	40%	63%
Proportion of mechanized equipment used	24%	68%	46%
Clear traffic flow planning	35%	70%	52%
Restaurants with low hygiene scoring	75%	25%	50%
Proportion of operators who wish to change their layout in the short term	20%	50%	35%
Main Problems			
Clean area and contaminated area are not separated	65%	30%	48%
Overlapping storage and processing areas	58%	25%	42%
Lack of fire prevention measures for equipment	72%	40%	56%

The proportion of Chinese restaurants using traditional layouts is significantly higher than that of other types of restaurants, reaching 76%. 86% of Chinese restaurants are still mainly manual, with a low level of mechanization. Among restaurants using traditional layouts, 75% have low hygiene scoring, indicating that layout is closely related to hygiene levels. The willingness of Chinese restaurant operators to make short-term changes is lower than that of other types of restaurants, at only 20%.

Appendix 6 Experimental Data of Food Design Prototype and Its Hygiene Score

Core elements of dish design prototype: Choose ingredients that are durable, low-risk, and easy to clean, such as vacuum-packed lotus root slices and frozen lobster meat. The production process should focus on standardized operations and zoning management to reduce cross-contamination, and use modern equipment such as sous vide cooking. The plating design is simple, reducing the complexity of manual operations and decorations, and using molds or automated tools.

Experimental methods and implementation: The experimental subjects are three different types of restaurants in Los Angeles County (Chinese restaurants, Western restaurants, and Chinese-Western fusion restaurants). The dish prototypes are Herb-Infused Lotus Scallop Tower, Truffle Lobster Wellington, and Quintessential Green Essence Consommé.

Experimental data results: The average hygiene score increased by 8.5 points, the average production time was shortened by 4.6 minutes, and the average waste rate was reduced by 6.1%.

Data analysis and discussion: The significant improvement in hygiene scores is attributed to the optimized process and the use of modern equipment. The improvement in efficiency and the reduction in waste rate show the effectiveness of process optimization and full ingredient utilization.

Conclusion and future application: Scientific dish design significantly improves hygiene scores and operational efficiency. The design prototype is suitable for different types of restaurants, and the effect can be further improved through AI and digital systems in the future.

Scientific dish design is the key path to improving the hygiene score of restaurants. By optimizing ingredients, processes, and plating, restaurants can achieve a win-win situation of hygiene and efficiency. The experimental data of this study verified the effectiveness of the design prototype and provided empirical support and practical reference for the healthy development of Chinese-Western fusion cuisine in the global market.

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