

## Research Article

### Ingredient Selection and Making Technology of Hot Pot Base

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**Abstract:** In this study, in order to make hot pot with better taste and nutrition value, the ingredient selection and making technology of hot pot base has been discussed and thus we get a better hot pot formula and recommended production process. Hot pot is one of the Chinese traditional diets, originated in the late Ming dynasty in the Jialing River and Chaotianmen Wharf in Chongqing. Container and the practice of contemporary hot pot all have one thing in common 1000 years ago. That is to use pot boil water or soup to rinse cooked food. The continuous development of hot pot is mainly manifested in two aspects. One is the ever-expanding market of hot pot. Second, the structure of hot pot nutrition is becoming more reasonable and constantly improves. Hot pot base is the most crucial influencing factor to hot pot flavor. Therefore, we do analysis of making technology and ingredient selection of hot pot base, after which we obtain an appropriate cooking process and determine the hot base ingredient formula. According to the investigation and survey of hot pot base making process and ingredients selection, we discussed the process and summarize the main operation points of making hot pot base. It is obtained that the making process can be divided into ingredient selection, material pretreatment, raw material ratio determination, fry the ingredients, packaging, cooling, inspection and finished product.

**Keywords:** Cooking process, hot pot, ingredient selection, making technology

## INTRODUCTION

Hot pot is one of the Chinese traditional diets, originated in the late Ming dynasty in the Jialing River and Chaotianmen Wharf in Chongqing. The main ingredients at that time were beef omasum, duck intestines and gross blood in Mong Kok.

The land of Shu since ancient times was accustomed to flavor the diet with pepper and Chinese prickly ash. Therefore hot pot is usually given priority to spicy taste. It was started by the vendor pedal-driven vehicles sold along the street, then quickly prevailed all over the country.

Container and the practice of contemporary hot pot all have one thing in common one thousand years ago. That is to use pot boil water or soup to rinse cooked food. This style of cooking has appeared as early as The Shang and Zhou Dynasties (the 16<sup>th</sup> century BC to 771 BC). It is the prototype of the hot pot. But the hot pot didn't truly thrive until the Ming and Qing dynasties.

The continuous development of hot pot is mainly manifested in two aspects. One is the ever-expanding market of hot pot. For example, many hotpot brand enterprises appears such as The emperor old mama, Shu nine incense, Kong Liang, Spicy Space and Tan fish head hot pot. Hot pot is famous both in domestic abroad and it is deeply loved by people all over the world. At present, hot pot business has been running in the United

States, Russia, South Korea, Hong Kong and other places. It is quite popular among consumers.

Second, the structure of hot pot nutrition is becoming more reasonable and constantly improves. Early-stage traditional hot pot was red-hot pot with cayenne pepper. It was hot and spicy. Some people might appear the symptoms such as dry mouth, intestines and stomach discomfort. But now, the early-stage traditional red-hot pot series have developed into seafood series, special double flavor pot, nourishing pot series etc., which makes the hot pot not only more delicious but also healthier.

Nowadays, on the one hand, as people become increasingly aware of diet and health, food that is easy to yeet hay is the last choice on their list. Now countries have paid more and more attention to food safety. For example, oil that has been used for many times is strictly prohibited. But one-time pot is not as good as the old oil, which could make it slightly inferior to hot pot in taste with the past and could also increase the cost. Meanwhile, hot pot base production technology is also changing fast. After 2002, the hot pot base production had almost achieved fully one-stop mechanical operation.

This study is aiming at the shortcomings of the existing technology. And based on the consideration to the health, the study of the production process of the hot pot base and ingredients selection adopts a

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combination of investigation and analysis. The accumulation of operation key points has provided hot pot base factory with relevant data and theoretical basis. Meanwhile the industrial production of hot pot base must benefit the local people and enterprises a lot. The hot pot base produced needs to meet the main raw materials and auxiliary materials standard, sensory evaluation criteria, physical and chemical indicators and hygienic index.

## MATERIALS AND METHODS

**Basic composition of hot pot base:** Hot pot base is the most crucial influencing factor to hot pot flavor. It plays a decisive role in hot pot flavor.

Commonly used hot pot base materials are beef tallow, salad oil, Pixian Douban, white spirit, salt, pepper, star anise, clove, Chinese prickly ash, garlic, sugar, chicken essence, fermented glutinous rice, fresh ginger, salt black bean, cardamine bean sprouts, green Chinese onion and other raw materials for making (Pino *et al.*, 2006).

### The production technology of hot pot base:

**Raw material selection:** The selection of raw materials is the basis of the hot pot base flavor (Fischer-Rasmussen *et al.*, 1991), first to determine the characteristics of products and the function of each ingredient. Such as the choice of Chinese prickly ash, the Fushun prickly ash picked in July to August is optimal for their quality and anesthetic power. Select the most excellent Pixian Douban and Chongqing Yongchuan salt black bean to make hot pot flavor taste the best:

- **Zi ba pepper:** Dried chili peppers after cooked are added with grated ginger and minced garlic. It is colored red with no mildew and no impurity substance and its humidity is moderate. The smell is rich.
- **Salt black bean:** Choose Chongqing Yongchuan salt black bean.
- **Edible vegetable oil:** Select high-quality rapeseed oil.
- **Beef tallow:** Select level of butter.
- **Chinese prickly ash:** Select the Fushun prickly ash picked in July to August with uniform particles and few black seed.
- **MSG:** Choose high quality level of MSG.
- **Pixian douban:** It needs to be oil red, salty, fresh with strong spicy taste and maotai-flavor and without impurity substance.
- **Ginger:** Yellow with no mildew phenomenon.
- **Garlic:** Garlic cloves are big with no mildew phenomenon.
- **Spices:** Be in accordance with relevant national standards.

### The determination of hot pot base raw materials:

**Rock candy:** The rock candy in hot pot base is used to improve the taste. From the perspective of traditional Chinese medicine, rock candy is mild to people with sweet taste and have the effect of tonifying qi and moistening lung, at the same time it also has the effect of cough, of phlegm-heat type. Cough, dry cough without phlegm, sputum with blood has a very good role of adjuvant therapy. It can be used to relieve cough caused by a cold hard diseases such as asthma, mouth sores and toothache (Pederson and Albury, 1953).

**Beef tallow:** The butter in hot pot base mainly increases the aroma of the dish and highlights the role of flavor. The beef tallow is rich in vitamin A and other fat-soluble vitamins and is rich in selenium, iodine and other trace elements, containing a lot of anti-cancer butyric acid, lauric acid of bacterial and fungal and conjugated linoleic acid and has the effect against intestinal infection of carbohydrate nerve phosphatide. Suet, which tastes sweet and is warm in property, can treat various sores caused by white spot bald disease such as mange. But people should not feed too much, due to its possibility of causing the recurrence of some certain disease.

**Edible vegetable oil:** Namely pure rapeseed oil, acting as the base oil in the hot pot base making process, has the effect of heat the pot bottom. Rapeseed oil is rich in lecithin and pigment, fatty acids, fat-soluble vitamins A, D, E, excluding or only contains trace amounts of cholesterol (0.2~0.8%), which make it a kind of high quality cooking oil.

**Pixian douban:** Pixian Douban is the crucial seasoner in red-hot pot. After adding it in halogen soup, it can increase the freshness and flavor, making the soup become a little spicy, thick and red. Bean paste is rich in lecithin and phospholipids and is known as the important components of the brain and nerve tissue. Choline in bean paste can strengthen memory and help the brain to be healthy. On the other hand, it helps lower cholesterol levels, improve people's appetite and promote gastrointestinal peristalsis and other health care function. And it is one of the known anti-cancer foods, which can reduce the incidence of colorectal cancer and prostate hyperplasia. High quality bean paste is reddish-brown, gloss oil moisten, disc and tidy, moderately thick (Dulkin and Friedemann, 1956).

**Zi ba pepper:** The main function of Zi ba pepper is to light color and highlight spicy. It is the unique condiment of GuiZhou province of China. Spicy but not fierce, it is with a unique scent.

**Ginger:** Ginger is added in halogen soup. It can effectively remove fishy smell, highlight the flavor. Ginger is spicy with a special spicy scent, containing volatile oil gingerol.

**Chinese prickly ash:** Chinese prickly ash in the hot pot base mainly has the effect of increasing hemp taste, the hemp taste is so strong that it can release cold and dehumidification pain, Chinese prickly ash is important to hot pot seasoning. It can be used to press fishy smell and increase fresh taste. We choose Chinese prickly ash picked in July and August and produced in Fushun county of Zigong city, which is of strong hemp taste (Monahan *et al.*, 1993).

**Garlic:** Garlic is mainly used to highlight flavor and season the soup, press fishy smell, also can have the effect of sterilization to a certain extent. Garlic spicy taste is fragrant. It has essential oil and disulfide compounds.

**Salt black bean:** With adding Salt black bean in halogen soup, the taste of salty fresh fragrance increases. Salt black bean is made from soybeans, salt, spices. Besides its umami scope, its odour is also mellow.

**Fermented glutinous rice:** Adding fermented glutinous rice into hot pot soup modulation halide can increase the taste of delicious and press fishy smell, making soup kind of sweet. Fermented glutinous rice is fermented by glutinous rice, which is good for relieving summer-heat. Main raw material is glutinous rice. The brewing process is simple and the taste is sweet and nice, for ethanol content amount is very small. In some production of the dishes, glutinous rice wine is often used as important seasoning. Rice grains are soft but not mushy, while wine juice is mellow, sweet and of intense flavor.

**Monosodium Glutamate (MSG):** MSG's function is to increase fresh flavor, which is modern flavors made of crops using the method of microorganism fermentation. The main ingredients are sodium glutamate. MSG is of no direct nutritional value to human body, but it can appeal people's appetite, increase the delicate flavors of the food and help to improve the digestibility of food. In addition, the monosodium glutamate also has the effect of treating chronic hepatitis, hepatic coma, neurasthenia and some other diseases.

**Spice:** Spice plays a major role in the making process of hot pot base. The collocation of the spices directly affects the flavor characteristics of the hot pot. Spices are the seeds of plants, bud, stem, root, etc., or their extract. It is of irritating smell, giving flavor to food and increasing appetite, helping digestion and absorption. Spices contain volatile oil (essential oil), spicy and organic acids, fiber and other components and most of its aroma comes from the essential oil after the distillation. Spices used in hot pot base are galangal, cinnamon, star anise, ligusticum wallichii, laurus nobilis, clove, fennel, amomum tsaoko.

**Cooking the condiments:** The cooking steps are as follows:

Boil the rapeseed oil  
Put beef tallow into the boiling rapeseed oil  
Cooled the boiling oil mixture to 80°C  
Put Zi ba pepper into oil mixture and let it stay for one hour  
Put Pixian Douban into the mixture and stir fry until it becomes red bright  
Put rocky candy and fermented glutinous rice into the mixture  
Put ginger and garlic granules into it and stir fry until aromatic  
Add salt black bean and rice wine and stir fry slightly  
Add spice mixture  
Add MSG and The Fushun prickly ash and stir fry until hemp flavor wafts out  
Remove the base mixture from heat

## RESULTS AND DISCUSSION

**Raw materials and preprocessing:** The choice of raw material is the basis of the hot pot base flavor. First we have to determine the characteristics of each product and the function of each ingredient. Such as the choice of Chinese prickly ash, the Fushun prickly ash picked in July to August is optimal for their quality and anesthetic power. Select the most excellent Pixian Douban and Chongqing Yongchuan salt black bean to make hot pot flavor taste the best.

**The key points need to paid attention when stirring and frying the mixture:**

- After adding the beef tallow, it needs to raise the oil temperature to 200°C, so as to fully mix.
- After putting Zi ba pepper, it needs to make it stay in the cooled oil for at least 1 h, for it can make the pepper flavor fully integrate into the oil.
- When stirring with garlic, ginger and spices, it needs to make temperature greater than 100°C, which is to make their flavor completely fried into the base.
- After adding Douban, it needs to stir-fry until the oil mixture becomes red and shiny. If the time is not enough, the hot pot base will have the raw taste of Douban. What's more, the halogen soup under the influence of Douban's starch will turn muddy; in contrast, if Douban was over fried, it would deepen the soup color and also make the soup taste bitter.
- The collocation of spices must be in strict accordance with the formula proportion. Small change in less dosage of various kinds of material can have great effect on the flavor. If adding inappropriate ingredient, the soup can produce bitter taste, which will also change the flavor of hot pot.

Table 1: Hot pot base formula ratio

Sequence number	Ingredient	Addition amount (g)
1	Beef tallow	1000
2	Rapeseed oil	500
3	Pixian douban	500
4	Zi ba pepper	500
5	Garlic	150
6	Ginger	150
7	The fushun prickly ash	50
8	Rocky candy	20
9	Fermented glutinous rice	20
10	MSG	15
11	Salt	15
12	Spice mixture	15
13	Salt black bean	40
14	Total amount	2975

**The characteristics of the hot pot base finished product:** Using this design and production of finished products shall meet the basic characteristics of hot pot base, that is, rosy and bright, taste delicious spicy, spicy, hemp but not bitter. If there is any discrepancy, then it is not qualified hot pot base.

After consulting a large number of document literatures and the analysis of multiple hot pot base formula evaluation, we finally determine the proportion of various raw materials and formulation of the base, which is shown in Table 1 (based on 1000 g beef tallow amount). The formula has provided a direct reference to the use for many times. It has the characteristics of reasonable matching, which tastes delicious.

### CONCLUSION

In this study, we investigated the traditional hot pot base production methods, the raw material selection and also discussed the points worthy of notice when frying the ingredients. In order to make hot pot with a better taste and higher nutritional value, we obtained the better production process and the ratio of hot pot base

ingredient. The operation process we discussed can be split into steps as material selection, material pretreatment, dosing, stirring and frying the ingredients, packaging, cooling and inspection. After all these procedures, then it can be finished product. We come to the best hot pot base formula (based on 1000 g beef tallow) include beef tallow 1000 g, rapeseed oil 500 g, Pixian Douban 500 g, Zi ba pepper 500 g, garlic 150 g, ginger 150 g, Fushun Chinese prickly ash 50 g, rocky candy 20 g, fermented glutinous rice 20 g, MSG 15 g, salt 15 g, compound spices 15 g and salt black bean 40 g. During the process of roasting, we should pay attention to the roasting temperature and time to avoid producing burnt smell and flavor.

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