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How To Eat Sichuan Hot Pot with The Dietary Guidelines for Americans, 2020-2025 In A More Nutritious, Safer and Healthier MyPlate Way, Particularly in Need of Oxygen During the Covid-19 Pandemic?

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Abstract

Sichuan hot pot is popular all over the world. Why is Sichuan hot pot so hot and spicy? What is authentic Sichuan hot pot? Is it nutritious and safe to eat? In America, how to eat Sichuan hot pot with the Dietary Guidelines for Americans, 2020-2025 in a more nutritious, safer and healthier MyPlate way, particularly in need of oxygen during the Covid-19 pandemic?

Keywords: Chinese Food; Sichuan Food, Sichuan Hot Pot Globalization; Myplate Plan, the Dietary Guidelines for Americans, 2020-2025; Nutrient Retention; Food Safety; Oxygen, The Covid-19 Pandemic

Abbreviations: COVID-19: Corona virus disease 2019

Introduction

Sichuan hotpot is transforming from a Sichuan food, a regional Chinese food to a global cuisine [1]. Anyone who searches on Google will see a lot of praise and worries about Sichuan hot pot. People who praise it want

to know why is Sichuan hot pot so hot and spicy? What is authentic Sichuan hot pot? Worried people want to know is Sichuan hot pot nutritious? Is it safe to eat? Can children eat it? But there is an important question that the public ignores, how to eat Sichuan hot pot in a healthier way, while the public needs fresh air and more oxygen during the covid-19 Corona virus pandemic? Based on our first-hand experience of eating Sichuan hotpot for many years, we

sort out, organize and summarize the utensils, food ingredients, eating methods and nutrients of authentic Sichuan hot pot to answer these questions. We provide our opinions on how to eat Sichuan hot pot with the Dietary Guidelines for Americans, 2020-2025 [2] in a more nutritious, safer and healthier MyPlate way [2], in America.

The Origin of Sichuan Food Cuisine and Brief History of Sichuan Hot Pot

Sichuan food cuisine has a history of more than 3,000 years [3]. The origin and characteristics of Sichuan cuisine are related to the geographical, climatic environment and agricultural crops.



Sichuan is located at 30.5°N, 102.5°E, a huge basin surrounded by mountains with humid, warm, cloudy, rainy southern climate. The Yangtze River, after the Nile and the Amazon, is the third longest river in the world, flowing through Sichuan. Sichuan is similar in size to current France and now population 80 million. The capital of Sichuan, Chengdu is located 30° 39' N, 104° 3' E, in the western plain of the Sichuan Basin, known as the Western Sichuan Plain or Chengdu Plain. Chengdu has a history of more than 3,000 years and has been also called Kingdom of Shu since ancient times. Shu means silkworm. Chengdu was destroyed and rebuilt four times in history. The name and location of the city Chengdu have never changed, now as the capital of Sichuan with a population of 20 million.

The ancient Shu established Dujiangyan irrigation system two thousand years ago. It's said the only successful ancient water irrigation system in the world, which still irrigates the Chengdu Plain until now. Dujiangyan regulates the flow of the Yangtze River, so there is no flood in summer and no droughts in winter, the soil is fertile and the crops are rich. It is called "the Land of Abundance" or "the Heaven on the Earth". Dujiangyan and Qingcheng Mountain by the river, the origin of Taoism, both are world cultural heritages [4]. The branch of the Yangtze River flows from west to east through Chengdu and into the upper mainstream of the Yangtze River in Chongqing, 160 miles east of Chengdu, current population of 30 million. The area between Chengdu and Chongqing is where Sichuan cuisine originated.

Between Chengdu and Chongqing, rice is the staple food with other abundant diet food ingredients, such as various vegetables, food spice seasoning supplement plants and meat includes pork, beef, sheep, goat, chicken, duck, geese and river fish etc.

Because its mountainous, watery and humid climate, according to the two-thousand-year theory of 《The Rites of Zhou》, original Han character name 《Zhou Li》 [5] food doctor, 《Inner Canon of the Yellow Emperor》, original name 《Huang Di Nei Jing》 [6] yin and yang and five elements wood, fire, earth, metal, water in traditional Chinese medicine, The original Sichuan Flower Pepper, Hua Jiao and ginger are hot foods to reduce diseases caused by humidity, so Sichuan cuisine adds a lot of Sichuan Flower pepper, and ginger to dehumidify. That's why traditional Sichuan food has unique spicy flavor. Until recently, 600 years ago, red chili pepper was introduced to Sichuan via Chongqing from Mexico. Sichuan cuisine added a large amount of red chili pepper.

Chongqing boatmen put vegetables, meat and fish into the boiled red chili pepper soup to scald and eat for warm, which became the prototype of Sichuan hot pot. Then, the hot pot was introduced to Chengdu and processed like art by chefs with special local Pixian-Red -Chili-Bean-Paste, the soul of Sichuan cuisine. This artistic processing has made Chongqing boatmen's food a popular Sichuan hot pot, which is now popular in the world.

Sichuan hot pot features "Ma, La, Tang", hot! hot! hot! The first hot, "Ma" is the feeling of numbness on the tongue produced by Sichuan flower peppercorns huajiao original in Sichuan. The second hot "La" is spicy, fiery feeling of red chili pepper. The third hot "Tang" is boiling soup over high heat.

How about authentic Sichuan hot pot?

According to our own experience of cooking Sichuan hot pot and the 《Sichuan Cuisine Classics》 [3], our article sorts out the methods and materials of Sichuan hot pot, and the cooking steps are as follows:

Food Utensils and Food Raw Materials

Food Utensils

Safe Stove device, wok, stainless steel Cookware Stock Pot, stainless steel long soup ladle, or hot pot colanders spoon with wood handles, frying spatula with wood handles, small mesh soup spoon, chopsticks, bowls, plates, teacup.

Food Raw Materials

Ingredients are divided into six categories in this article.

Soup base, (Broth + Soup ingredients)

The soup base, broth with soup ingredients, is usually cooked by the chef of the restaurant, and then the soup ingredients are stir-fried in vegetable oil and then the broth is added. The soup base is fresh and red with unique Sichuan hot pot "Ma, La, Tang" flavor, which also shows the style of different restaurants [3].

- Broth, to make soup broth with pork etc. usually made by restaurant chefs to cook long time.
- Soup ingredients: Pixian-Red -Chili-Bean-Paste, Sichuan salt, Sichuan flower peppercorns huajiao, red chili pepper, ginger etc.

Meat and Vegetables

Meat: Beef slices, beef tripe, beef small steaks, beef meat balls, beef livers, pork slices, small pork chops, pork meat balls, pork livers, pig brain, pork sausage, ham etc.

Seafood: Various fish fillets, shrimp, squid slices, fish meat balls, kelp seaweed, crab meat etc.

Bean starch ingredients

Tofu, Dry Tofu, Bean gluten, Vermicelli, potato, lotus root, corn, etc.

Vegetable

Green vegetables: lettuce, Chinese cabbage, small cabbage, Shanghai cabbage

Yellow vegetables: bean sprout.

Red vegetables: carrot.

White vegetables: white cauliflower, white turnip, loofah, White mushroom.

Black vegetables: black fungus, dry mushrooms.

Dip

Sesame oil, chopped fine green onion, minced garlic, red pepper powder, etc.

Drink

Tea, water

Fruit

watermelon in summer, mandarin orange in winter

Cooking and Eating

Sichuan hot pot is cooked by the customer themselves by using three cooking methods of blanching, scalding, and boiling. The customer put into the raw food materials into the boiling broth soup base to heat and cook for ready-to-eat.

Eating steps:

1. Go to a restaurant and the bathroom, especially children, because Sichuan hotpot takes a long time to eat. Wash your hands before meals. Then sit around a table with friends and family. In Sichuan hot pot restaurants, there is a gas-burning stove in the center of the dining table. Don't touch!
2. Wait for the Sichuan hot pot soup base to be served, about 30 minutes. At this time, wear an apron, provided by the restaurant, to protect the clothes. drink tea, take a small bowl of sesame oil for dipping, and order various raw meat, seafood, and vegetable ingredients from the waiter.
3. When the waiter serves the Sichuan hot pot soup base, pay special attention to the children, and don't get too close to the table to avoid scald!
4. After the waiter serves the Sichuan hot pot soup base, he turns on the stove on the table to keep the original hot pot soup boiling.
5. The customer puts the fresh ingredients into the original soup of Sichuan hot pot with chopsticks. If you can't use chopsticks, you can use a small mesh soup spoon. Put the meat first for a long-time cooking for about 20 minutes, and blanch, scalding, and boiling other legumes vegetables and green vegetables for seconds to less than 10 minutes.

Is Sichuan hot pot nutritious and safe to eat? How to eat Sichuan hot pot to maximize nutrition?

The traditional and authentic Sichuan hot pot ingredients we summarize in this article include meat, seafood, beans, vegetables, fruits, and tea in this article. All are the ingredients consumed by more than 90% of the population, and are the key foods, covering the seven kinds of nutrients water, carbohydrates, proteins, fats, vitamins, minerals, dietary fiber provided by key foods [7].

Sichuan hot pot soup base contains various spices. Pepper, chili, ginger, chili sauce, vegetable oil, etc. provide phytohormones, plant antioxidant substances. Soybean foods in Sichuan hot pot

ingredients such as tofu, dried tofu, fermented soybeans with bean sprouts and are the functional food.

Now because Sichuan hot pot has transformed from a local food to a global food [1]. The diets across the globe, in all regions and cultures, are influenced by the traditions of the past, along with the produce and livestock available. Local tastes, agricultural economics, and incomes still have a profound effect on what many people eat around the world [8]. Based on local ingredients and government policies, how to improve the nutrition of Sichuan hot pot and combine it with local cuisines is worthy of in-depth study.

In the United States, the Department of Agriculture (USDA) proposes MyPlate plan from the Dietary Guidelines for Americans, 2020-2025 [2], which is designed for policymakers and nutrition and health professionals to help all individuals and their families consume a healthy, nutritionally healthy dietary pattern, MyPlate plan, to make every bite count [2]. MyPlate dietary pattern contains five groups of food half of plate fruits and vegetables of all type, dark green, red and orange, beans, peas, and lentils, starchy, and other vegetables; Whole fruit; Grains, half of which are whole grain; Dairy, fat-free or low-fat milk, yogurt, soy beverages etc.; Protein foods, lean meats, poultry, and eggs; seafood; beans, peas, and lentils; and nuts, seeds, and soy products, Oils, vegetable oils and oils in food, seafood and nuts, Limit added sugars, saturated fat, and sodium, and limit alcoholic beverages. At every life stage, meeting food group recommendations [2], increasing eating time, using fresh whole food materials, cooking at home.

Sichuan hot pot, eating while cooking, chewing slowly for a long time, promoting food digestion and absorption. Sichuan hotpot in fact provides a cooking platform, allowing customers to cook by themselves, as cooking at home, all of which meet the Dietary Guidelines [2] requirements, and Sichuan hotpot is a popular dish at an affordable price. However, we haven't found Sichuan hot pot has standard framework for choosing various ingredients, meat and various vegetables, and calculate food calories. Our opinion is referring to the Dietary Guidelines [2] and choose ingredients to balance the dietary nutrition of Sichuan hot pot in a more nutritious, safer and healthier MyPlate way. Particularly, during the Covid-19 Pandemic, people need more nutrient-dense foods with healthy eating patterns and get more fresh air oxygen.

Our opinion is referring to the Dietary Guidelines [2] when choosing food ingredients in MyPlate plan. Make Sichuan hot pot more in line with American nutritional standards. to maximize nutrition retention [Table 1].

Table 1: Nutrition Comparison of Traditional Authentic Sichuan Hot Pot and American Style MyPlate Sichuan Hot Pot.

No	Food Group	Traditional Authentic Sichuan Hotpot	MyPlate US-Style Sichuan Hotpot	Change to the Healthy U.S.-Style Dietary Pattern	Nutrients Dietary Guidelines for Americans, 2020-2025.	Estimated Calorie Needs 4-8 ys F/M Calorie Level Assessed 1,200 /1,400	Estimated Calorie Needs 19-30 ys F/M Calorie Level Assessed 2,000/ 2,400	Estimated Calorie Needs 51+ F/M Calorie Level Assessed 1,600/ 2,000
1	Water	Tea, Water.	Water	No change	Macronutrients Water and Micronutrients Minerals Vitamins	N/A	N/A	N/A
2	Dairy products	N/A	Yogurt, Milk Dairy products	Change: MyPlate add dairy products, drink before or while eating Sichuan hot pot to protect the gastric mucosa from burns or pepper irritation.	Macronutrients Proteins (Energy) and Micronutrients Minerals Vitamins	RDA Calcium (mg) F/M 1,000 Vitamin D (IUd) 600	RDA Calcium (mg) F/M 1,000 Vitamin D (IUd) 600	RDA Calcium (mg) F/M 1,200/1,000 Vitamin D (IUd) 600
3	Grains	Refined grain	Whole grains:	Change: MyPlate add half of whole grains steamed buns, bread.	Macronutrients Carbohydrates (Energy) and Micronutrients Minerals Vitamins	RDA Carbohydrate (g) F/M 130	RDA Carbohydrate (g) F/M 130	RDA Carbohydrate (g) F/M 130
4	Proteins	Meat, seafood, Poultry, Eggs, Soy products, Nuts, Seed Customer's preferences.	Meat, seafood, Poultry, Eggs, Soy products, Nuts, Seed Control the proportion.	Change: MyPlate Control the proportion of protein	Macronutrients Proteins Lipids. (Energy) and Micronutrients Minerals Vitamins	RDA Protein (g) F/M 19 Vitamin B-6 (mg) F/M 0.6	RDA Protein (g) F/M 46/56 Vitamin B-6 (mg) F/M 13	RDA Protein (g) F/M 46/56 Vitamin B-6 (mg) F/M 15/17
5	Vegetables	Various Vegetables Not by Color	Vegetables: Dark Green Red, Orange Beans, Peas, Lentils: Starchy Other	Change: My plate Dark green, red, yellow, purple choose various color vegetables,	Macronutrients Carbohydrates. (Energy) Dietary fiber and Micronutrients Minerals Vitamins	RDA Vitamin A (mcg RAEd) 400 Dark-Green Red, Orange Vegetables (cup eq/wk) 1-2 Starchy Vegetables (cup eq/wk) 3 ½	RDA Vitamin A (mcg RAEd) 700/900 Dark-Green Red, Orange Vegetables (cup eq/wk) 2-4 Starchy Vegetables (cup eq/wk) 5	RDA Vitamin A (mcg RAEd) 700/900 Dark-Green Red, Orange Vegetables (cup eq/wk) 1½-5 ½ Starchy Vegetables (cup eq/wk) 5
6	Fruits	Watermelon in summer Orange in Winter	Make half plate fruits and vegetables	Change: MyPlate Make half plate fruits and vegetables add various color fruits, red strawberries, blue berries, purple grapes, yellow bananas, green kiwis, etc.	Macronutrients Carbohydrates. (Energy) Dietary fiber and Micronutrients Minerals Vitamin C	RDA Vitamin C (mg) F/M 25	RDA Vitamin C (mg) F/M 75/90	RDA Vitamin C (mg) F/M 75/90
7	Oils	Rapeseed oil is a certain amount of animal oil.	limit the amount of animal oil, to reduce the intake of trans fatty acids.	Change: MyPlate limit the amount of animal oil, to reduce the intake of trans fatty acids.	Macronutrients Lipids fatty acids (Energy) and Micronutrients Minerals Vitamins	AMDR Total lipid (% kcal) F/M 25-35	AMDR Total lipid (% kcal) F/M 25-35	AMDR Total lipid (% kcal) F/M 25-35

8	Food supplement spices	Ginger, Sichuan pepper, corn cinnamom, star anise etc.	N/A	No Change	Non-nutrients Plant hormones Antioxidants	N/A	N/A	N/A
9	Sugar	No added sugar. All natural sugars from natural foods, vegetables, fruits.	Added or natural sugars	No Change	Macronutrients Carbohydrates. (Energy)	DGA Added Sugars (% kcal) F/M <10	DGA Added Sugars (% kcal) F/M <10	DGA Added Sugars (% kcal) F/M <10
10	Salt	Sichuan Salt	N/A	No Change	Micronutrients Minerals	CDRR Sodium (mg) F/M 1,500	CDRR Sodium (mg) F/M 2,300	CDRR Sodium (mg) F/M 2,300
F/M = Female/Male; RDA = Recommended Dietary Allowance; IU = International Units; RAE = Retinol Activity Equivalents; AMDR = The Acceptable Macronutrient Distribution Range; DGA = Dietary Guidelines for Americans; CDRR = Chronic disease risk reduction.								

The safety of Sichuan hot pot

Based on our experience and knowledge, our opinion is that three aspects must be considered for Sichuan hot pot. First, food safety. Since Sichuan hot pot food has at least 20 kinds of ingredients each meals. Customers must choose fresh, pollution-free such as free bacteria, Salmonella, Hepatitis virus, and the current covid-19 virus, and non-toxic foods to avoid poisoning. We call for the prohibition of using fresh wild mushrooms as ingredients as food in any dish. We have the painful experience of students who lost their lives by eating fresh wild mushrooms.

Second, the safety of allergic ingredients. Sichuan hot pot has a lot of food, and some people are allergic to certain foods, especially children. Parents should fully consider and record which ingredients their children are allergic to when choosing ingredients. Because Sichuan hot pot is also social, but everyone's physique is different, we suggest that an individual constitutes the individual's own complete dietary intake based on the Dietary Guidelines [2]. Customers at the same table should not persuade the other to eat the same food. For some customers who don't like spicy food, you can tell the waiter to order a non-spicy soup base. Or choose Yuanyang pot, that is, a soup pot with a grid in the middle, half of which is spicy, and half of which is not spicy. Or Jiugongge pot, that is, the soup pot is separated by nine grids. Everyone eats their own food. Both Yuanyang pot and Jiugongge pot are related to local cultural legends.

Three burns and scalds caused by Sichuan hot pot have been reported by local newspapers in Asia, such as the stove device exploding. Because the temperature of the hot pot is very high, customers cook and eat the ingredients directly, causing burns and ulcers on the oral mucosa. Repeated ulcers might cause cancer. [9]. Our opinions: customers use chopsticks to pick up the cooked ingredients and immediately dip them in sesame oil until the ingredients come down to room temperature before eating and Sichuan hot pot should not be eaten every day. Eat about once a month. After being scalded, get cured and have time for recover before next eating. There were local news in Asia of a waiter slipping onto the bottom of the soup and scalding a child. Sichuan hot pot restaurants all over the world should open their stores in

accordance with the safety regulations stipulated by local policies, with enough space, safe fire devices, and the waiters should be careful not to slip when loosening the hot pot soup to ensure customers' safety.

During the covid-19 world pandemic that requires oxygen, how to eat Sichuan hotpot to avoid covid-19 infection?

Because the ingredients are fresh, nutritious, high-temperature sterilization, and safe controllable, Sichuan hot pot is almost a perfect food for family and friends social gatherings, eating while cooking, and having small talk together to share food and enjoy life.

However, during the covid-19 pandemic, academic literature reported that customers at a neighboring table in a hot pot restaurant in Hong Kong was infected [10]. The reason is that covid-19 has been proven to be an airborne aerosol-borne virus. We have also published academic articles to explore the way and mechanism of how covid-19 virus spread from viral hosts to infect healthy people through hot air when eating Sichuan hot pot [10]. We also observed that obese people have difficulty breathing while wearing masks [11], and oxygen is the most important Nutrients [12]. Our opinion is that Sichuan hot pot restaurants can operate in open areas, outdoors, park picnic spots, seaside, mountains and other places where local governments stipulate that hot pot restaurants can be opened. For example, based on personal information, we learned that in Chengdu there are open-air Sichuan hot pot restaurants in the countryside with social distance and fresh air full of oxygen, and Loquat Garden in Chongqing, the whole mountain is full of open-air hot pot restaurants. In that way, even during the covid-19 pandemic, customers can still enjoy Sichuan hot pot cuisine and eat more healthy foods that can help [13].

Discussion

The most important two things to Sichuan hotpot: First, the food ingredients must be fresh and safe to avoid food poisoning. Don't drink hot pot soup left after hot pot. Because of prolonged cooking at high temperatures, some nutrients may chemically degrade and become toxic, such as nitrosamines [7].

Second, Sichuan hot pot cooking stove fire device, prohibit the use of alcohol stove. Drinking alcohol is prohibited, lest sparks

jump out and cause an explosion. However, the local governments such as Singapore etc. have formulated corresponding safety regulations. Sichuan hot pot is a nutritionally balanced diet and safe controllable food [14].

We have not seen any reports on the determination of nutrition retention factors by different cooking times and methods of blanching, scalding, and boiling for food ingredients in Sichuan hot pot. Most of them measure single nutrient in foods, such as the loss or gain of total carotenoids in cooked broccoli, zucchini, and carrot in different cooking time and cooking methods are different [15]. If the nutrient retention factors can be used to guide the cooking time and cooking methods, the nutrition value of Sichuan hot pot would be further improved.

Conclusion

The Traditional authentic Sichuan hot pot is a rich nutritious and safe controllable Social Food. Sichuan hot pot meets the requirements of seven major nutrients including Water, Carbohydrates, Proteins, Lipids, Vitamins, Minerals and Dietary fiber.

With the Dietary Guidelines for Americans, 2020-2025 in a More Nutritious, Safer and Healthier MyPlate Way, Sichuan hot pot has improved five food groups choices to add dairy products, whole grain foods, and chosen vegetables and fruits of different colors, making Sichuan hot pot more in line with the American MyPlate healthy dietary pattern. During the covid-19 pandemic, we have our opinion that keep social distance according to government requirements, and Sichuan Hot Pot can be eaten in an open area with fresh air and sufficient oxygen.

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Conflicts of Interest

None.

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