

The Manufacture and Nutritional Chemical Analysis of *Daucus carota* L. var. *sativa* Hoffm. Jam

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Abstract. To develop the *Daucus carota* L. var. *sativa* Hoffm. industry in our country, the further development and utilization of *Daucus carota* L. var. *sativa* Hoffm. agricultural resources, using modern processing technology to *Daucus carota* L. var. *sativa* Hoffm. processed into *Daucus carota* L. var. *sativa* Hoffm. Jam. So as to provide scientific basis for the relevant departments and enterprises and related production units.

Using mechanical processing technology, the *Daucus carota* L. var. *sativa* Hoffm processed into carrot paste, and by chemical analysis methods and modern instrument, chemical composition of *Daucus carota* L. var. *sativa* Hoffm Jam to carry out a full range analysis

The findings indicated that, the *Daucus carota* L. var. *sativa* Hoffm. jam manufacture craft is simple, the cost is low, does not need the expensive specific installation, is advantageous in the *Daucus carota* L. var. *sativa* Hoffm. jam production processing technology promotion and the *Daucus carota* L. var. *sativa* Hoffm. jam development intensive processing. In the sauce the nutrition is rich, the amino acid is complete, including 17 kind of above amino acids and the human body 8 kind of essential amino acids, the protein content 1.85 %, fat content 1.56 %, cellulose content 0.87 %, carbohydrate content 8.21% . Vitamin C quite is specially high for 19.9mg/100g , the potassium, the calcium, the iron, the zinc content are rich, respectively is 30.0mg/100g, 34.1mg/100g 1.42mg/100g , 0.24mg/100g Moreover the flavor is tasty, it is easy to digest, enhances the nutrition the use factor, and also eliminated *Daucus carota* L. var. *sativa* Hoffm. jam the general edible method to cause the inflation shortcoming.

The *Daucus carota* L. var. *sativa* Hoffm. jam is one of the nutrition for the old and seasons young. This has provided the scientific basis for the *Daucus carota* L. var. *sativa* Hoffm. Thorough research and the development . It is one kind concurrently suitable nutrition rich newest seasoning for the old and young

Introduction

Daucus Carota L. var. *sativa* Hoffm. is a Biennial herbs plants of the Umbelliferae carrot genus[1,2]. Chinese medicine believes that carrot warm sweet, flat. Has Jianpixiaoshi, Liver eyesight, detoxification, rash, cough antiasthmatic. Carrot and enhance resistance and indirectly destroy the cancer cells, blood sugar, reduce blood fat, blood pressure, promote the synthesis of adrenaline, strong heart function in patients with hypertension and coronary heart disease, is a good food. And carrot every 100 grams of fresh weight with 1.67 ~ 12.1 mg carotene content higher than 5 ~ 7 times of tomato, edible after digestion into vitamin A, can prevent night blindness and respiratory diseases.

The present situation of production and trade in China in China Gan Xun, carrot carrot planting area close to the world of the total planted area of 40%, the total output accounted for 1/3 of the total output of the world, is the world's largest fully deserve carrot production in china. China in Shandong, Hebei, Liaoning, Jilin, Inner Mongolia area, water sufficient area, yield is higher, can reach 4500-6500 kg. Jingbian County Dongkeng Town of Yi Wan Village in 2015 a pound of carrot to sell 1.5 yuan, an average yield per mu in 10 thousand jins, light *Daucus Carota* L. var. *sativa* Hoffm an income reached 300 thousand yuan. 2016 the village planted more than 20 acres of carrot

farmers income of more than 500 thousand yuan a large number of export exported to South Korea, Dubai, Japan, singapore.

At present the *Daucus Carota L. var. sativa Hoffm* planting area and yield are the forefront of the world, but the mechanization level is very low, most of the artificial planting, or simple planter is inefficient, and the harvest is mainly rely on manual, how to improve the further study of [3,4,5,6,7,8] *Daucus Carota L. var. sativa Hoffm* planting and harvesting mechanization and modernization and deep the processing technology and so on.

This paper aims to develop carrot industry in our country, the further development and utilization of carrot agricultural resources, using the mechanical processing method of the carrot processed into carrot paste, and by chemical analysis methods and modern instrument, chemical composition of *Daucus Carota L. var. sativa Hoffm* Jam to carry out a full range analysis. So as to provide scientific basis for the relevant departments and enterprises and related production units.

Materials and Methods

Materials. *Daucus Carota L. var. carrot sativa Hoffm.* from Chongqing city of Shapingba Chen Jia Wan vegetable market to buy.

Reagent: glutamic acid, alanine, glycine, leucine, isoleucine, arginine, lysine and threonine Acid, valine, phenylalanine, tyrosine, histidine, serine, aspartic acid, methionine, vitamins.

B1, B2, B5, B6, B11, B12, vitamin C, beef extract, peptone, sodium chloride, sulfuric acid, hydrochloric acid, potassium sulfate.

Salt, edible oil, etc..

Instruments and equipment: fat extraction equipment, 2300 grams of protein analyzer (KJELTEC2300, Sweden),

Ultraviolet spectrophotometer (uv-9100), tissue grinder (JJ-2), amino acid analyzer (Aas vario 6), atomic absorption spectrophotometer, clean bench, asepsis room, pressure cooker, oven, Soxtec Avanti2055 fat tester (Forster card holding company).

Method. Process flow

Daucus Carota L. var. carrot sativa Hoffm. → raw material removal with mud → pest root part (soil and weeds) → wash → scrape the hair with sediment epidermis → cut into small pieces → boiling → add 40% root cast mill ~ 50% water pulping → add salt and other accessories → bottlin → gpasteurization → sampling → storing

Daucus Carota L. var. carrot sativa Hoffm. Jam processing technology

Daucus Carota L. var. carrot sativa Hoffm Because the carrot growth process is the growth of roots in the mud and often a lot of dirt, dirt must be removed before processing, scraping with hair skin after fully rinse after cooking and then beating, adding proper amount of water (40% ~ 50%) for pulping, pulp to fine. Environmental sanitation requirements of processing (in the asepsis room), beater and utensils should be sterilized containers. The plasma made with salt 7~ 10%, 0.4% pepper, pepper 5%, umami 1%, ginger 6%, vegetable oil 1% ~ 3%, mixing, bottling, pasteurization disinfection, sampling qualified after storage, low temperature or normal temperature preservation.

Methods for the determination of nutritional components of *Daucus Carota L. var. carrot sativa Hoffm* Jam.

Determination of protein content by Gil Turk 2300 Protein analyzer. Determination of fat content by Avanti2055 Soxtec fat detector method [6]. Determination of vitamin [6] by liquid chromatography volumetric method. Determination of amino acid content by Hitachi L-8800 amino acid analyzer [6]. Determination of mineral content [6] by Hitachi Z-5000 atomic absorption spectrophotometer. The determination of carbohydrate by [6] volumetric method. Determination of color aroma by sensory method [7].

The Results of Analysis. Analysis of nutritional components of *Daucus Carota L var. carrot sativa Hoffm* Jam.

Daucus Carota L var. carrot sativa Hoffm Jam., according to Li Heng, Wang Jirang, sensory identification of food sensory evaluation method Mingxun, its nutrient rich flavor (good taste) delicious aroma, with the whole body, the color is red brown. After the determination of the protein,

fat, carbohydrate, high cellulose content, the results in Table 1 and Fig. 1.

Table 1. *Daucus Carota* L var. *carrot sativa Hoffm* Jam main nutrient content (mg /100g)

Component name	contents in <i>Daucus Carota</i> var. <i>carrot sativa Hoffm</i> Jam	Content in raw materials	L
protein	1.85	0.99	
crude fat	156.	0.25	
carbohydrate	821	780	
Crude cellulose	0.87	0.80	



Figure 1. *Daucus Carota* L var. *carrot sativa Hoffm* raw material *Daucus Carota* L var. *carrot sativa Hoffm* Jam products

The results can be seen from table 1, 1.85mg/100g, . *Daucus Carota* L var. *carrot sativa Hoffm* Jam protein content 1.56mg/100g fat, carbon waterCompound 821mg/100g, cellulose 0.87mg/100g. The four major nutrient content of carrot Jiangzhong are very rich in protein is the main nutrient elements necessary for the human body, and it is closely related to life activities, no protein, no life is unimaginable, life is a protein found in the way.

Analysis of amino acids and the content of. *Daucus Carota* L var. *carrot sativa Hoffm* Jam Determination of kinds and contents of amino acids in. *Daucus Carota* L var. *carrot sativa Hoffm* Jam using Hitachi L-8800 automatic amino acid analyzer, the results are shown in Table 2

Table 2 *Daucus Carota* L var. *carrot sativa Hoffm* Jam amino acid content(mg/100g)

Serial number	Name	content	Serial number	Name	content
1	Asn	310	10	Ile	2.18
2	Thr	2.34	11	Leu	2.61
3	Ser	2.48	12	Tyr	1.62
4	Glu	7.75	13	Phe	1.79
5	Gly	2.21	14	Lys	3.55
6	Ala	2.34	15	His	1.40
7	Cys-Cys	0.12	16	Arg	3.43
8	Val	2.38	17	Pro	0.80
9	Met	1.10			

Seen from table 2, *Daucus Carota* L var. *carrot sativa Hoffm* Jam amino acid, contains 17 kinds of amino acids, 8 kinds of essential amino acids, which is a new type of amino acid.

Analysis of *Daucus Carota* L var. *carrot sativa Hoffm* Jam vitamin content

Determination of vitamin content of *Daucu Csarota L var. carrot sativa Hoffm* Jam by liquid chromatography volumetric method, the results in table 3.

Table 3 *Daucu Csarota L var. carrot sativa Hoffm* Jam vitamin content (mg/100g)

Content name	content	Content name	content
VA	1.90	VC	19.9
VPP	0.12	VB ₂	0.14
VB ₃	011	VB ₁	0.29

We can be seen from table 3, the content of vitamin Jiangzhong carrot is rich in vitamin C content, which is the highest of 19.9mg/100g - g-1, followed by vitamin A1.90mg/100g, vitamin B1 and B2 0.14mg/100g. Vitamin is one of the 6 major nutritional elements of the human body, is an important nutrient for human health. If the human body for a long time the lack of a vitamin can cause the typical deficiency of the vitamin. For this reason, people have to eat enough vitamin to ensure the normal physiological function of the body. Carrot is Jiangzheng meet this requirement.

Analysis of *Ducu Csarota L var. carrot sativa Hoffm* Jam mineral elements

Ducu Csarota L var. carrot sativa Hoffm Jam by Hitachi Z-5000 atomic absorption spectrophotometer method, the mineral content is shown in Table 4

Table 4 *Ducu Csarota L var. carrot sativa Hoffm* Jam mineral elements (mg/100g)

Element name	abbreviation	content
potassium	K	192.1
chlorine	CL	2.11
calcium	C _a	34.1
magnesium	M _g	15.0
iron	F _e	1.42
copper	Cu	0.05
zinc	Z _n	0.24
sodium	Na	75.6
phosphorus	P	30.0

Table 4 shows that the results of *Ducu Csarota L var. carrot sativa Hoffm* Jam in mineral range. Potassium, calcium, magnesium, iron, zinc, rich in content. They are all essential elements of the human body. The calcium content as high as 34.1mg/100g, it is the most important in the human body and organism, calcium is the main mineral elements that constitute the human body, the body will appear calcium deficiency rickets and osteoporosis. Potassium content is high 192.1 /100g mg, potassium can promote the activity of the human body, the heart is weak and hypertension disease have certain curative effect. Zinc is 0.24 /100g mg, zinc is one of the very important elements. The iron content of 1.42mg /100g, which is of some enzymes (e.g. decarboxylase) cofactor, human iron deficiency can cause anemia disease. Therefore, calcium, iron, zinc, potassium and other minerals play an important role in the human body is an important part of the study of mineral elements in food, but also one of the important signs of food nutrition. So the *Ducu Csarota L var. carrot sativa Hoffm* Jam is a unique seasoning in this respect.

Conclusions

The results show that *Ducu Csarota L var. carrot sativa Hoffm* paste production process is simple, low cost, no special equipment expensive, is conducive to the development of deep processing production technology and the promotion of *Daucu Csarta L var. carrot sativa Hoffm* . *Daucu Csarota L var. carrot sativa Hoffm* Jam is rich in nutrition, amino acids, containing more than 17

kinds of amino acids and 8 kinds of essential amino acids, protein content, fat content, 1.85mg/100g, 1.56mg/100g, 0.87mg/100g, 821mg/100g, cellulose content, carbohydrate content. In particular, vitamin C is relatively high for 19.9mg/100g, potassium, calcium, iron, zinc, rich in content, respectively, /100g 1.42mg/100g, Mg, 0.24 /100g 192.1mg. But delicious, this is made after such processed carrot paste products, not only changed the past single eat, improve the utilization rate of nutrient, and increase the need for new varieties of Ducu Csarota L var. carrot sativa Hoffm market. The latest is a condiment for both young and old rich nutrition.

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