

Tomato, Pumpkin and Chilli Mixed Sauce

A Project Report

Submitted by

KUKIL KONWAR (CIT/10/FPT/05)

DHUNURAJ NARZARY (CIT/09/FPT/04)

In partial fulfilment for the award of Diploma

IN

Food Processing Technology

Under the supervision of

Mrs. Tanuja Muramalla



DEPARTMENT OF FOOD PROCESSING TECHNOLOGY

केन्द्रीय प्रौद्योगिकी संस्थान कोकराझार

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BODOLAND TERRITORIAL AREAS DISTRICTS :: KOKRAJHAR :: ASSAM :: 783370

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केन्द्रीय प्रौद्योगिकी संस्थान कोकराझार

(Centrally Funded University under MHRD, GOVT. OF INDIA)

Department of Food Processing Technology, KOKRAJHAR, BTC, ASSAM

Miss. Tanuja Muramalla

Assistant Professor, FPT

Phone no.:

Email:

Date:

CERTIFICATE OF APPROVAL

This is to certify that the dissertation entitled "PREPARATION OF VALUE ADDED PRODUCT FROM TOMATO, PUMPKIN AND CHILLI MIXED SAUCE USING CLASS II PRESERVATIVES" under taken by following 6th semester students:

KUKIL KONWAR (CIT/10/FPT/05)

DHUNURAJ NARZARY (CIT/09/FPT/04)

Of dept. of FPT, Central Institute of Technology, Kokrajhar, in the partial fulfillment of the requirement for the award of the diploma in Food Processing Technology, is a bonafide work carried out by them during the academic year 2013 under my supervision and guidance.

Under the supervision of

Mrs. Tanuja Muramalla

Assistant Professor, Dept. of FPT

Countersigned by

Mr. Anuck Islary

HOD (I/C), FPT



Central Institute of Technology, KOKRAKHAR

केन्द्रीय प्रौद्योगिकी संस्थान कोकराझार

(Centrally Funded University under MHRD, GOVT. OF INDIA)

Department of Food Processing Technology, KOKRAJHAR, BTC, ASSAM

Mrs. Tanuja Muramalla

Assistant Professor, FPT

Phone no.:

Email:

Date:

CERTIFICATE OF THE SUBMISSION OF PROJECT REPORT

This is to certify that the following students of 6th semester diploma course (Food Processing Technology) have submitted their project report on "PREPARATION OF VALUE ADDED PRODUCT FROM TOMATO, PUMPKIN AND CHILLI USING CLASS II PRESERVATIVES" to the department in partial fulfillment for the diploma in Food Processing Technology.

KUKIL KONWAR (CIT/10/FPT/05)

DHUNURAJ NARZARY (CIT/09/FPT/04)

Mrs. Tanuja Muramalla

Assistant Professor, FPT

DECLARATION

We hereby declare that the project work entitled "PREPATATION OF VALUE ADDED PRODUCT FROM TOMATO, PUMPKIN AND CHILLI USING CLASS II PRESERVATIVES" is an authenticated work carried out by us under the guidance of Miss Tanuja Muramalla for the partial fulfillment of the award of the Diploma in Food Processing Technology and this work has not been submitted for similar purpose anywhere else except to Department of FPT, Central Institute of Technology, KOKRAJHAR.

Date: 21/6/2013

Place: CIT KOKRAJHAR

KUKIL KONWAR

Kukil Konwar

DHUNURAJ NARZARY

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KUKIL KONWAR (CIT/10/FPT/05)

DHUNURAJ NARZARY (CIT/09/FPT/04)

ABSTRACT

This project directs the processing of vegetables during the excess production of vegetables. Here we included tomato, pumpkin and chilly as raw ingredients which are easily perishable after some days. So, we did this project to utilize that vegetable and processed to produce a new product.

The requisite material is extracted from tomato, pumpkin and chilly by proper processing which after being added with preservatives (Benzoic acid and Vinegar) are then fed to be aseptically packaged and stored. This project emphasised on waste minimisation and better supplementation by developing a mixed sauce out of tomato, pumpkin and chilly.

1. INTRODUCTION:

1.1 SAUCE

In cooking, a sauce is liquid, creaming or semi-solid food served on or used in preparing other foods. Sauces are not normally consumed by themselves; they add flavour, moisture, and visual appeal to another dish. *Sauce* is a French word taken from the Latin *salsa*, meaning *salted*. Possibly the oldest sauce recorded is *garum*, the fish sauce used by the Ancient Romans.

Sauces need a liquid component, but some sauces (for example, pico de gallo salsa or chutney) may contain more solid elements than liquid. Sauces are an essential element in cuisines all over the world. Sauces may be used for savory dishes or for desserts. They can be prepared and served cold, like mayonnaise, prepared cold but served lukewarm like pesto, or can be cooked like bechamel and served warm or again cooked and served cold like apple sauce. Nowadays mostly bought ready-made like soy sauce or ketchup, others still are freshly prepared by the cook. Sauces for salads are called salad dressing. Sauces made by deglazing a pan are called pan sauces.

Cuisine:

Cuisine (from French *cuisine*, "cooking; culinary art; kitchen"; ultimately from Latin *coquere*, "to cook") is a characteristic style of cooking practices and traditions, often associated with a specific culture. Cuisines are often named after the geographic areas or regions that they originate from.

French cuisine

Sauces in French cuisine date back to the middle ages. There were many hundreds of sauces in the culinary repertoire. In 'classical' French cooking (19th and 20th century until *nouvelle cuisine*), sauces were a major defining characteristic of French cuisine.

- In the late 19th century, and early 20th century, the chef Auguste Escoffier consolidated Carême's list to five mother sauces. They are:
 - Sauce Béchamel, milk-based sauce, thickened with a white roux.
 - Sauce Espagnole, a fortified brown veal stock sauce.

- Sauce Velouté, white stock-based sauce, thickened with a roux or a *liaison*, a mixture of egg yolks and cream.
- Sauce Hollandaise, an emulsion of egg yolk, butter and lemon or vinegar.
- Sauce Tomato, tomato-based.

Asian cuisines

- Sauces used in traditional Japanese cuisine are usually based on *shōyu* (soy sauce), *miso* or *dashi*. *Ponzu*, citrus-flavored soy sauce, and *yakitori no tare*, sweetened rich soy sauce, are examples of shoyu-based sauces. Miso-based sauces include *gomamiso*, miso with ground sesame, and *amamiso*, sweetened miso. In modern Japanese cuisine, the word "sauce" often refers to Worcestershire sauce, introduced in the 19th century and modified to suit Japanese tastes. Tonkatsu, okonomiyaki, and yakisoba sauces are based on this sauce. Japanese horseradish or wasabi sauce is used on sushi and sashimi or mixed with soy sauce to make wasabi-joyu.
- Some sauces in Chinese cuisine are soy sauce, doubanjiang, hoisin sauce, sweet bean sauce, chilli sauces, oyster sauce, and sweet and sour sauce.
- Korean cuisine uses sauces such as doenjang, gochujang, samjang, and soy sauce.
- Southeast Asian cuisines, such as Thai and Vietnamese cuisine, often use fish sauce, made from fermented fish.
- Indian, Pakistani and other South Asian cuisines use sauces such as tomato-based curry sauces, tamarind sauce, coconut milk/paste-based sauces, and chutneys.

British cuisine

Gravy is a traditional sauce used on roast dinner, which traditionally comprises roast potatoes, roast meat, boiled, steamed or roasted vegetables and, optionally, Yorkshire pudding, which are usually only eaten with beef. The sole survivor of the medieval bread-thickened sauces, bread sauce is one of the oldest sauces in British cooking, flavoured with spices brought in during the first returns of the spice missions across the globe and thickened with dried bread. Apple sauce, mint sauce and horseradish sauce are also used on meat (pork, lamb and beef respectively).

1.2 TOMATO

The word "tomato" may refer to the plant (*Solanum lycopersicum*) or the edible, typically red, fruit that it bears. Having originated in México, the tomato was spread around the world following the Spanish colonization of the Americas, and its many varieties are now widely grown, often in greenhouses in cooler climates.

The tomato is consumed in diverse ways, including raw, as an ingredient in many dishes and sauces, and in drinks. While it is botanically a fruit, it is considered a vegetable for culinary purposes, which has caused some confusion. The fruit is rich in lycopene, which may have beneficial health effects.

The tomato belongs to the nightshade family. The plants typically grow to 1–3 meters (3–10 ft) in height and have a weak stem that often sprawls over the ground and vines over other plants. It is a perennial in its native habitat, although often grown outdoors in temperate climates as an annual. An average common tomato weighs 102–105 grams.

Varieties:

Tomato varieties are roughly divided into several categories, based mostly on shape and size.

- “Slicing” or “Globe” tomatoes are the usual tomatoes of commerce, used for a wide variety of processing and eating.
- Beefsteak tomatoes are large tomatoes often used for sandwiches and similar applications. Their kidney-bean shape, thinner skin, and shorter shelf life make commercial use impractical.
- Oxheart tomatoes can range in size up to beefsteaks, and are shaped like large strawberries.
- Plum tomatoes, or paste tomatoes (including pear tomatoes), are bred with a higher solids content for use in tomato sauce and paste, and are usually oblong.
- Cherry tomatoes are small and round, often sweet tomatoes generally eaten whole in salads.

- Campari tomatoes are also sweet and noted for their juiciness, low acidity, and lack of mealiness. They are bigger than cherry tomatoes, but are smaller than plum tomatoes.



Cherry tomatoes



Cherry tomatoes-various

Colour upon ripening



Roma or Bangalore

tomatoes



Various heirloom

tomato

Nutritional benefits of tomato:

Tomatoes are now eaten freely throughout the world, and their consumption is believed to benefit the heart, among other organs. They contain the carotene lycopene, one of the most powerful natural antioxidants. In some studies, lycopene, especially in cooked tomatoes, has been found to help prevent prostate cancer, but other research contradicts this claim. Lycopene has also been shown to improve the skin's ability to protect against harmful UV rays. A study done by researchers at Manchester and Newcastle universities revealed that tomato can protect against sunburn and help keeping the skin looking youthful. Natural genetic variation in tomatoes and their wild relatives has given a genetic plethora of genes that produce lycopene, carotene, anthocyanin, and other antioxidants. Tomato varieties are available with double the normal vitamin C (Doublerich), 40 times normal vitamin A, high levels of anthocyanin (resulting in blue tomatoes), and two to four times the normal amount of lycopene.

Red tomatoes:

Nutrition value per 100 g

Energy	74 kJ (18 kcal)	Water	95 g
Carbohydrates	3.9 g	Vitamin A	42 µg (5%)
Sugar	2.6 g	Beta carotene	445 µg (4%)
Dietary fiber	1.2 g	Lutein and zeaxanthin	123 µg
Fat	0.2 g	Thiamine (vit. B ₁)	0.037 mg (3%)
Protein	0.9 g	Niacin (vit. B ₃)	0.594 mg (4%)
Vitamin B ₆	0.08 mg (5%)	Manganese	0.114 mg (5%)
Vitamin C	14 mg (14%)	Phosphorus	24 mg (3%)
Vitamin E	0.54 mg (4%)	Potassium	237 mg (5%)
Vitamin K	7.9 µg (8%)	Lycopene	2573 µg
Magnesium	11 mg (11%)		

Percentages are relative to US recommendations for adults. Source: USDA nutrient database.

Pumpkin:

A pumpkin is a gourd-like squash of the genus *Cucurbita* and the family Cucurbitaceae (which also includes gourds). It commonly refers to cultivars of any one of the species *Cucurbita pepo*, *Cucurbita mixta*, *Cucurbita maxima*, and *Cucurbita moschata*, and is native to North America. They typically have a thick, orange or yellow shell, creased from the stem to the bottom, containing the seeds and pulp. Pumpkins are widely grown for commercial use, and are used both in food and recreation. Pumpkin pie, for instance, is a traditional part of Thanksgiving meals in the United States, and pumpkins are frequently carved as decorations around Halloween. A pumpkin that has a little face carved in it and

hollowed out and decorated with candles inside is known as a jack o'lantern; these are often used at Halloween.

The word pumpkin originates from the word *pepon*, which is Greek for "large melon". The French adapted this word to *pompon*, which the British changed to *pumpion* and later American colonists changed that to the word we use today, "pumpkin". The origin of pumpkins is not definitively known, although they are thought to have originated in North America. The oldest evidence, pumpkin-related seeds dating between 7000 and 5500 BC, were found in Mexico. Pumpkins are a squash-like fruit that range in size from less than 1 pound (0.45 kilograms) to over 1,000 pounds (450 kilograms).

Pumpkins generally weigh 9–18 lbs (4–8 kg) with the largest (of the species *C. maxima*) capable of reaching a weight of over 75 lbs (34 kg). The pumpkin varies greatly in shape, ranging from oblate to oblong. The rind is smooth and usually lightly ribbed. Although pumpkins are usually orange or yellow, some fruits are dark green, pale green, orange-yellow, white, red and gray.

Pumpkins are monoecious, having both male and female flowers on the same plant. The female flower is distinguished by the small ovary at the base of the petals. These bright and colourful flowers have extremely short life spans and may only open for as short a time as one day. The colour of pumpkins is derived from the orange pigments abundant in them. The main nutrients are lutein and both alpha and beta carotene, the latter of which generates vitamin A in the body.

Nutritional value of Pumpkin:

Nutritional per 100 g

Energy	109 kJ (26 kcal)	Vitamin B ₆	0.061 mg (5%)
Carbohydrates	6.5 g	Folate (vit. B ₉)	16 µg (4%)
Sugars	2.76 g	Vitamin C	9 mg (11%)
Dietary fiber	0.5 g	Vitamin E	0.44 mg (4%)

Fat	0.1 g	Vitamin K	1.1 µg (1%)
Protein	1 g	Calcium	21 mg (2%)
Vitamin A equiv.	426 µg (53%)	Iron	0.8 mg (8%)
beta-carotene	3100 µg (29%)	Magnesium	12 mg (3%)
lutein and zeaxanthin	1500 µg	Manganese	0.125 mg (6%)
Thiamine (vit. B ₁)	0.05 mg (4%)	Phosphorus	44 mg (6%)
Riboflavin (vit. B ₂)	0.11 mg (9%)	Potassium	340 mg (7%)
Niacin (vit. B ₃)	0.6 mg (4%)	Sodium	1 mg (0%)
Pantothenic acid (B ₅)	0.298 mg (6%)	Zinc	0.32 mg (3%)

Percentages are relative to US recommendations for adults. Source: USDA nutrient database.

Chilli:

The chilli pepper (also chile pepper or chilli pepper, from Nahuatl *chilli* is the fruit of plants from the genus *Capsicum*, members of the nightshade family, Solanaceae. The term in British English and in Australia, New Zealand, India, Malaysia and other Asian countries is just chilli without "pepper".

Chilli peppers originated in the Americas. After the Columbian Exchange, many cultivars of chilli pepper spread across the world, used in both food and medicine.

India is the world's largest producer, consumer and exporter of chilli peppers. Among which the city of Guntur in Andhra Pradesh produces 30% of all the chillies produced in India and the state of Andhra Pradesh contributes to 75% of all the chilli exports from India.



Immature chilli in the field



Thai pepper

Species and cultivars:

The five domesticated species of chilli peppers are:

- *Capsicum annuum*, which includes many common varieties such as bell peppers, wax, cayenne, jalapeños, and the chiltepin.
- *Capsicum frutescens*, which includes malagueta, tabasco and Thai peppers, piripiri, and Malawian Kambuzi.
- *Capsicum chinense*, which includes the hottest peppers such as the naga, habanero, Datil and Scotch bonnet.
- *Capsicum pubescens*, which includes the South American rocoto peppers.
- *Capsicum baccatum*, which includes the South American aji peppers.

The substances that give chilli peppers their intensity when ingested or applied topically are capsaicin (8-methyl-*N*-vanillyl-6-nonenamide) and several related chemicals, collectively called *capsaicinoids*. Capsaicin is also the primary component in pepper spray, a non-lethal weapon.

When consumed, capsaicinoids bind with pain receptors in the mouth and throat that are responsible for sensing heat. Once activated by the capsaicinoids, these receptors send a message to the brain that the person has consumed something hot. The brain responds to the burning sensation by raising the heart rate, increasing perspiration and release of endorphins. A 2008 study reports that capsaicin alters how the body's cells use energy produced by hydrolysis of ATP. In the normal hydrolysis the SERCA protein uses this energy to move calcium ions into the sarcoplasmic reticulum. When capsaicin is present, it alters the conformation of the SERCA, and thus reduces the ion movement; as a result

the ATP energy (which would have been used to pump the ions) is instead released as thermal energy.

Some of the world's hottest chilli peppers are:

Trinidad Moruga Scorpion	2.1M SHU(Scoville heat unite)
Bhut Jolokia	1.6M SHU
Carolina Reaper	1.474M SHU
Trinidad Scorpion Butch T	1.463M SHU
Naga Viper	1.4M SHU
Infinity chilli	1.2M SHU
Trinidad Moruga Scorpion	1.2M SHU

Nutritional value of chilly:

Red chillies contain large amounts of vitamin C and small amounts of carotene (provitamin A). Yellow and especially green chillies (which are essentially unripe fruit) contain a considerably lower amount of both substances. In addition, peppers are a good source of most B vitamins, and vitamin B₆ in particular. They are very high in potassium, magnesium, and iron. Their very high vitamin C content can also substantially increase the uptake of non-heme iron from other ingredients in a meal, such as beans and grains.

Peppers, hot chilli, red, raw:

Nutritional value per 100g

Energy	166 kJ (40 kcal)	beta-carotene	534 µg (5%)
Carbohydrates	8.8 g	Vitamin B ₆	0.51 mg (39%)
Sugars	5.3 g	Vitamin C	144 mg (173%)
Dietary fiber	1.5 g	Iron	1 mg (8%)
Fat	0.4 g	Magnesium	23 mg (6%)
Protein	1.9 g	Potassium	322 mg (7%)
Water	88 g	Capsaicin	0.01g – 6 g
Vitamin A equiv.	48 µg (6%)		

Percentages are relative to US recommendations for adults. Source: USDA nutrient database.

1.2 Objective of Project:

For our project we select Tomato, Pumpkin and Chilli as main component. In this project we make sauce by using class II preservatives (Benzoic acid), in which vegetable are available in the market and most of them are perishable due to excess production or due to market region. The objective of the project is to produce a new mixed sauce and to enhance quality, taste using our creative skills. The same product, which are made of different ratios of main ingredients in our project.

2. INGREDIENTS AND METHODS:

2.1 INGREDIENTS:

Experiment no. 1		Experiment no. 2	
Recipe	Wt.	Recipe	Wt.
Tomato	400 g	Tomato	500 g
Pumpkin	400 g	Pumpkin	600 g
Chilli	100 g	Chilli	100 g
Onion	15 g	Onion	15 g
Garlic	15 g	Garlic	15 g
Masala	1 g	Masala	1 g
Sugar	50 g	Sugar	50 g
Salt	5 g	Salt	5 g
Vinegar	1 g	Vinegar	1 g
Benzoic acid	1 g	Benzoic acid	1 g

Experiment no. 1 and 2 are different in amount of ingredients and experiment no. 3 and 4 are repetition of experiment no.1 to minimize the wastage and developed the product.

2.2.METHODE OF PREPARATION:

TOMATO, PUMPKIN AND CHILLI MIXED SAUCE:

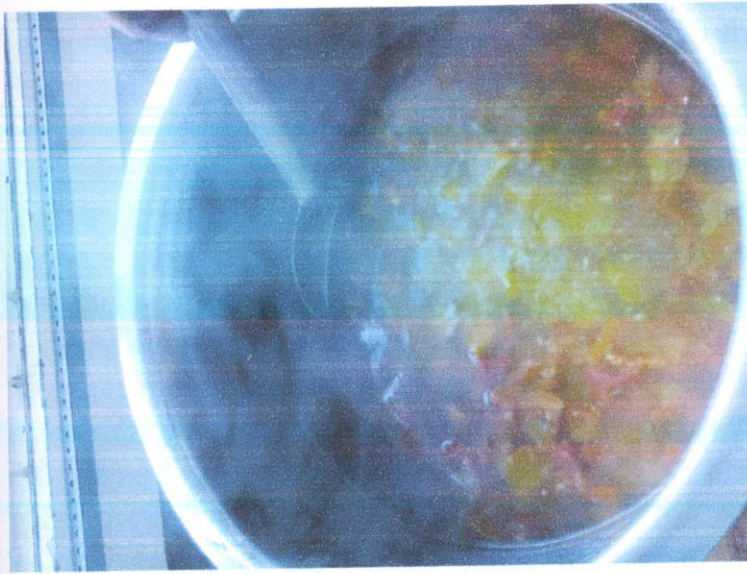
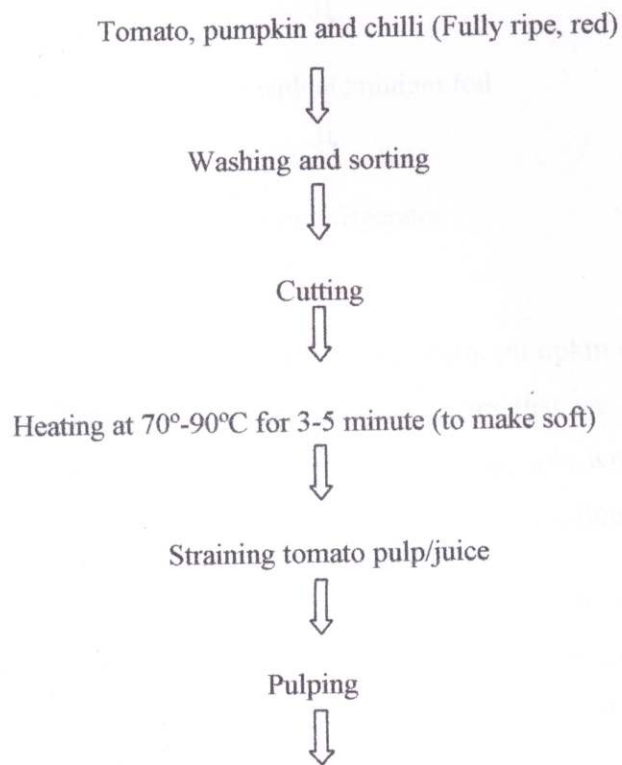


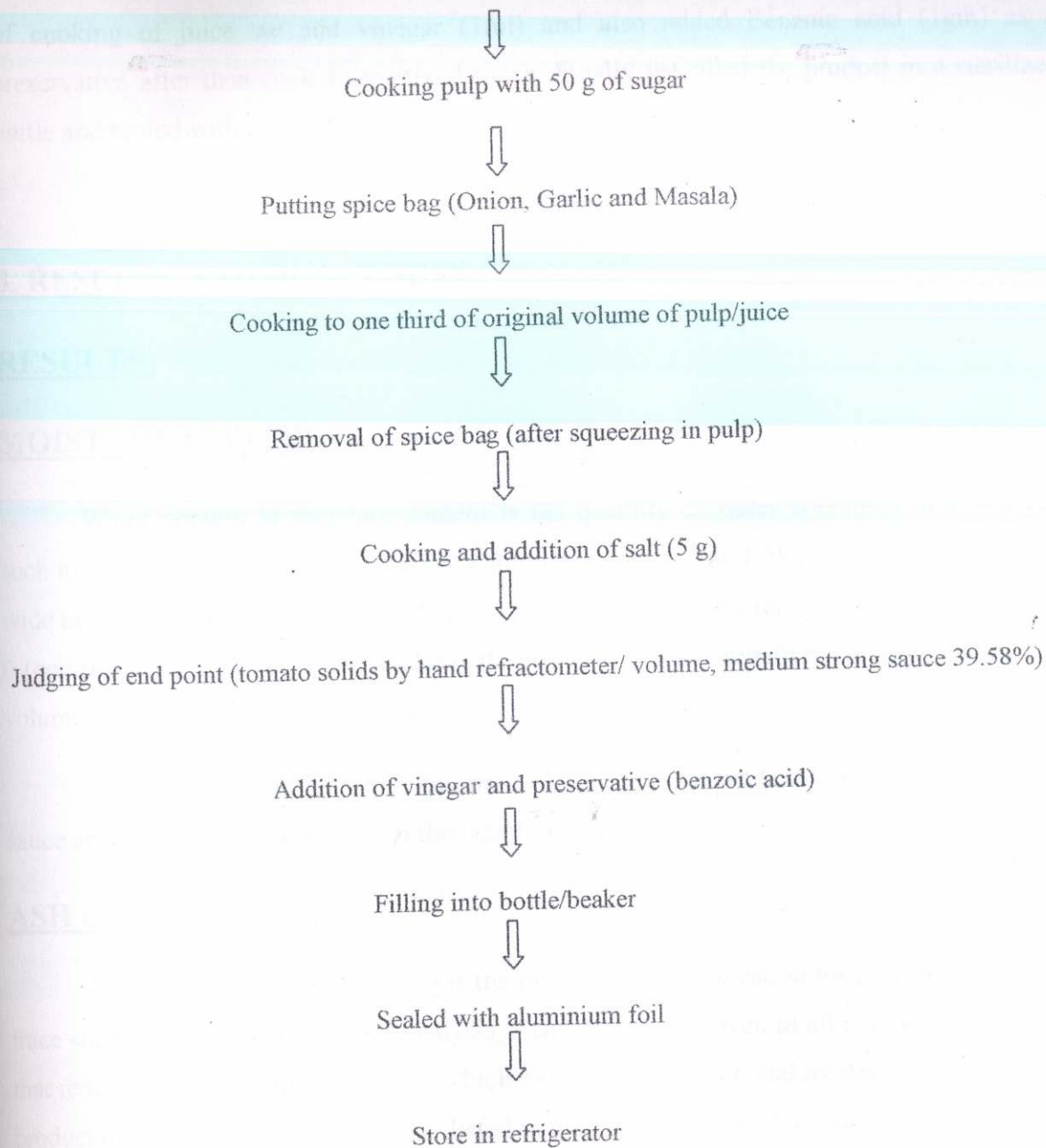
Fig.: Heating of mixed pulp at 70°-90°C

METHOD:

PROCESS INVOLVED IN MIXED SAUCE:

Main processing flow chart of the tomato, pumpkin and chilli mixed sauce.





First of all we take fully ripped and red tomato, pumpkin and Chilli and then washed tomato, pumpkin, chilli and all other ingredients. After that we cut them into small pieces with required size (2cm ×1.5cm). Then we boiled the sample with water to cover the entire sample at 70°-90°c for 3-5 minutes, which make the sample soften.

After that we extract the juice from the pulp and again the juice is heated 50gm of sugar at 70°-90°c and also mixed all the spices including onion, garlic, masala and salt mixed paste to improve the quality and taste of the product. We heated the juice until we obtain final concentrated juice where we unnecessary amount of moisture is removed. At the final stage

of cooking of juice we add vinegar (1ml) and also added Benzoic acid (1gm) as a preservative after than cooled the mixed sauce. Finally we filled the product in a sterilized bottle and sealed with cap and stored in refrigerator.

3. RESULTS AND DISSCUSION:

RESULTS:

MOISTURE CONTENT:

Water content or moisture content is the quantity of water contained in a material, such as soil (called soil moisture), rock, ceramics, fruit, or wood. Water content is used in a wide range of scientific and technical areas, and is expressed as a ratio, which can range from 0 (completely dry) to the value of the materials' porosity at saturation. It can be given on a volumetric or mass (gravimetric) basis.

In our experiment, to determine the moisture content we take 5 ml sample of mixed sauce and dried in hot air oven until the weight is constant.

ASH CONTENT:

In analytical chemistry, ashing is the process of mineralization for preconcentration of trace substances prior to chemical analysis. Ash is the name given to all non-aqueous residue that remains after a sample is burned, which consists mostly of metal oxides. Ash is the waste product of fire, and its content may be listed in nutrition labels, such as for pet food.

Ash is one of the components in the proximate analysis of biological materials, consisting mainly of salty, inorganic constituents. It includes metal salts which are important for processes requiring ions such as Na^+ (Sodium), K^+ (Potassium), and Ca^{2+} (Calcium). It also includes trace minerals which are required for unique molecules, such as chlorophyll and hemoglobin.

In our experiment, to determine the ash content we take 5 ml sample of mixed sauce and dried in muffle furnace until the weight is constant.

ACIDITY:

Department of Food Processing Technology, CIT Kokrajhar

An acid is a substance which reacts with a base. Commonly, acids can be identified as tasting sour, reacting with metals such as calcium, and reacting with bases such as sodium carbonate. Aqueous acids have a pH under 7, with acidity increasing the lower the pH. Chemicals or substances having the property of an acid are said to be acidic.

To determine the acidity, we take 25 ml of sample with 100 ml water and diluted the sample. Now the filtered sample is titrated with 0.1 N NaOH solutions.

TOTAL SOLUBLE SOLID:

Total soluble solids content of a solution is determined by the index of refraction. This is measured using a refractometer, and is referred to as the degrees Brix. Brix is the term used when a refractometer equipped with a scale, based on the relationship between refractive indices at 20°C and the percentage by mass of total soluble solids of a pure aqueous sucrose solution. This tests the solids concentration of a sucrose containing solution. It is widely used during fruit and vegetable processing to determine the concentration of sugar in the products. Sugar concentration is expressed in degrees Brix. At 20°C, the Brix is usually considered equivalent to the percentage of sucrose (sugar) in the solution (60° Brix is equivalent to a sugar content of 60%). The measurement must be made at 20°C to get an accurate value.

pH OF THE MIXED SAUCE:

In chemistry, pH is a measure of the activity of the (solvated) hydrogen ion. $p[H]$, which measures the hydrogen ion concentration, is closely related to, and is often written as, pH. Pure water has a pH very close to 7 at 25 °C. Solutions with a pH less than 7 are said to be acidic and solutions with a pH greater than 7 are basic or alkaline. The pH scale is traceable to a set of standard solutions whose pH is established by international agreement. Primary pH standard values are determined using a concentration cell with transference, by measuring the potential difference between a hydrogen electrode and a standard electrode such as the silver chloride electrode. Measurement of pH for aqueous solutions can be done with a glass electrode and a pH meter, or using indicators.

pH measurements are important in medicine, biology, chemistry, agriculture, forestry, food science, environmental science, oceanography, civil engineering, chemical engineering, nutrition, water treatment & water purification, and many other applications.

In this project the total initial wt. of all the experiment 988 g, 1288 g, 998g and 998 g in experiment no. 1,2,3 and 4 respectively and we obtain 570.8 g, 1140.8 g, 359.53 g and 418.7 g of waste material respectively.

PERCENTAGE OF WASTAGE:

Sl. No.	Experiment no.	Percentage of wastage
1	1	57.77%
2	2	88.57%
3	3	36.02%
4	4	41.95%

ANALYSIS RESULT OF THE MIXED SAUCE:

Analysis content	Experiment no.1	Experiment no.2	Experiment no.3	Experiment no.4
Moisture content	32%	80%	93%	70%
Ash content	4%	4%	0.4%	0.6%
Acidity	0.06%	0.06%	0.05%	0.06%
pH value of the sample	4.34	4.65	4.89	4.66
Total soluble solid in the sample	60.43 Brix	58.86 Brix	29.38 Brix	32.51 Brix

MICROBIAL TEST:

Objective: To review the microbiological growth and quality control.

Introduction:

One of the most serious and widespread risk from foods is the occurrence of pathogenic micro-organism. The occurrence of the pathogen in the product either because it was in the raw product or because the food became contaminated during processing or preparation. In adequate cooking, processing or preparation can also result in disease. The centres for Disease Control (CDC) investigates each documented outbreak of food-borne disease and attempts to determine not only the specific micro-organism and foods involved but also the events which led to the outbreak.

Materials required:

1. CMO549, Rose Bengal agar
2. Distilled water
3. Conical flask
4. 5 Test tube
5. 5 petridishes
6. Tips
7. Micro pipette

Procedure:

1. Add 16.0g of rose Bengal agar per 500 ml of distilled water in conical flask.
2. Test tube, petridishes, tips and the medium is sterilized at 121°C for 15 minutes in pressure cooker.
3. Now, the mixed sauces are diluted in 9 ml of distilled water with 1 ml of sample in test tube.
4. After that little amount of medium is mixed with 3-4 drops of sample in petridishes with the help of micro pipette.
5. Kept the petridishes in laminar air flow for some time to solidify the medium.
6. After that petridishes are incubated at 27°C.

Observation:

After 72 hours, the growth of yeasts and moulds (like Neurospora and Rhizopus) in petridishes are as follows-

Experiment 1=148CFU

Experiment 2=81CFU

Experiment 3=174CFU

Experiment 4=187CFU

4. CONCLUSION:

We would like to conclude that our project included that preparation of value added product from tomato, pumpkin and chilly with simple processing requirements in the departmental lab "PREPARATION OF VALUE ADDED PRODUCT FROM TOMATO, PUMPKIN AND CHILLY MIXED SAUCE USING CLASS II PRESERVATIVES".

We made four mixed sauce using same procedure and same ingredients but experiment no. 3 and 4 are repetition of experiment no.1 and tried to minimize the wastage and developed the product. Here we observed several characteristics like- moisture content, ash content, total soluble solid, pH and microbial stability to develop the mixed sauce product.

5. BIOLIOGRAPHY:

Book:

- FOOD SCIENCE FIFTH. EDITION-
NORMAN N. POTTER AND JOSEPH H. HOTCHKISS

Websites:

- www.answer.com
- www.google.com
- www.wikipedia.com