COLLEGE OF HORTICULTURE
V.C.S.G. UTTARAKHAND UNIVERSITY OF HORTICULTURE & FORESTRY
BHARSAR, PAURI GARHWAL, UTTARAKHAND – 246 123

Horticulture work experience - 101/102/103

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Industrial training programme

Establishment And Location Of Centre For Technology And Development

The centre for technology and development is a unit of society for economic and social studies (SESS) It is an independent organization working in the field of sustainable rural development through science and technology applications.

CTD(field station), Sahaspur, Dehradun(Uttrakhand), was established on1995. Low cost fruits and vegetables processing unit, Sahaspur was established under AICP on low cost processing and preservation of horticultural produce(1996).

Manager- Mr. P. Bhandari

Secretary – Mr. D. Raghunandan

Operation manager – Mr. Vinod Uniyal

Production manager – Mr. Subodh Pundir

History

- The formation of CTD with several field stations in dehradun (UK), Mandi(HP) , Ukhrul(Manipur) and Kavali(AP) was catalysed by the Delhi science forum, a reputed public- interest organisation focusing on S & T policy issues with the goal of putting forward & demonstrating alternating models for sustainable development.
- The field station at Sahaspur, Dehradun continues to operate under CTD aegis while other field station have been spun-off into independent registered societies .
- CTD/SESS is a multidisciplinary group of dedicated and experienced professionals with background in engineering , natural sciences, medicine, social sciences etc.

Objectives:-

- To provide the students opportunity to develop their skills.
- Internship will increase a students sense of responsibility and good work habit.
- To build the strength and team work spirit, self confidence in the students
- The students will be able instilled with good moral value such as responsibility, commitment and truthfully and trustworthy during their training.

Main activities :

- **Promotion and handhondling of Micro and Small Enterprises**
- **Natural resource management**
- **Manufacture of FARMER's FOOD PRODUCT**
- **Regd. With KVIB, UCOST-TRC**
- **Empanelled Udyami Mitra Under Ministry of MSME, Govt. Of India**

PRODUCTION

PRODUCT	QUANTITY
Squash	15-20ton./yr.
Jam	7-11ton. /yr.
Marmalade	3-4ton/yr.
Murabba	2-3ton/yr.
RTS	8-12ton/yr.
Pickle	6-8ton/yr.
Guava cheese	0.5-1ton/yr.

Produce

- Squashes
- Ready to serve (RTS) drinks
- Murabba
- Pickle
- Jam
- Marmalade
- Guava cheese
- Wild apricot oil
- Almond oil
- Cannabis oil
- Reetha shampoo
- Fibre

Equipments and Machines used in processing

- Pulper
- Kettle
- Homogenizer
- Bottle Filling Machines
- Boiler
- Fibre unit
- Wild apricot oil expression
- Plant extraction unit

Pulper 16 and 32 mesh

Kettle

Homogenizer

Bottle filling machine

Automatic bottle filling machine

2 bottles filling machine

Boiler


ENERGY
MANAGEMENT
इस बायलर को
सौर तापन प्रणाली
पर आधारित
वाटर हीटर
(क्षमता 200 ली.)
से जोड़कर ऊर्जा
का संरक्षण किया
जा रहा है।
सहयोग : U-COST

Refractometer

Hot Gun

Fibre unit

Oil expression

Threshing cum Winnowing Machine

Preservation:-preservation is defined as the technique of extending storage life of the product without deterioration in edible quality for its future use

Methods of food preservation:-

Physical methods-

- Refrigeration
- Freezing
- Pasteurization
- Sterilization
- Drying and dehydration
- Irradiation

Chemical methods

- Salt
- Sugar
- Vinegar
- potassium metabisulphite
- Sodium benzoate

fermentation

Preserved raw material

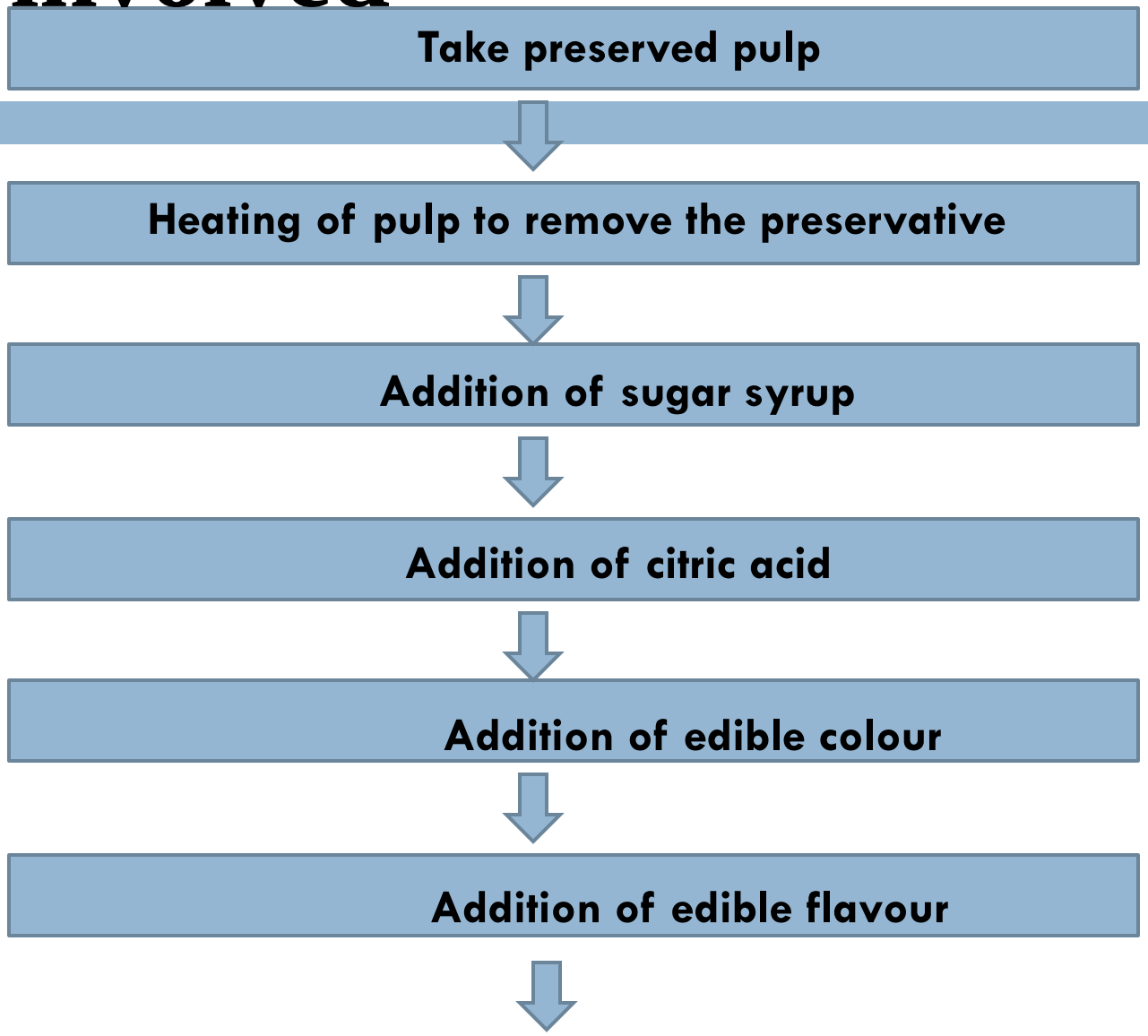
Preparation of squash

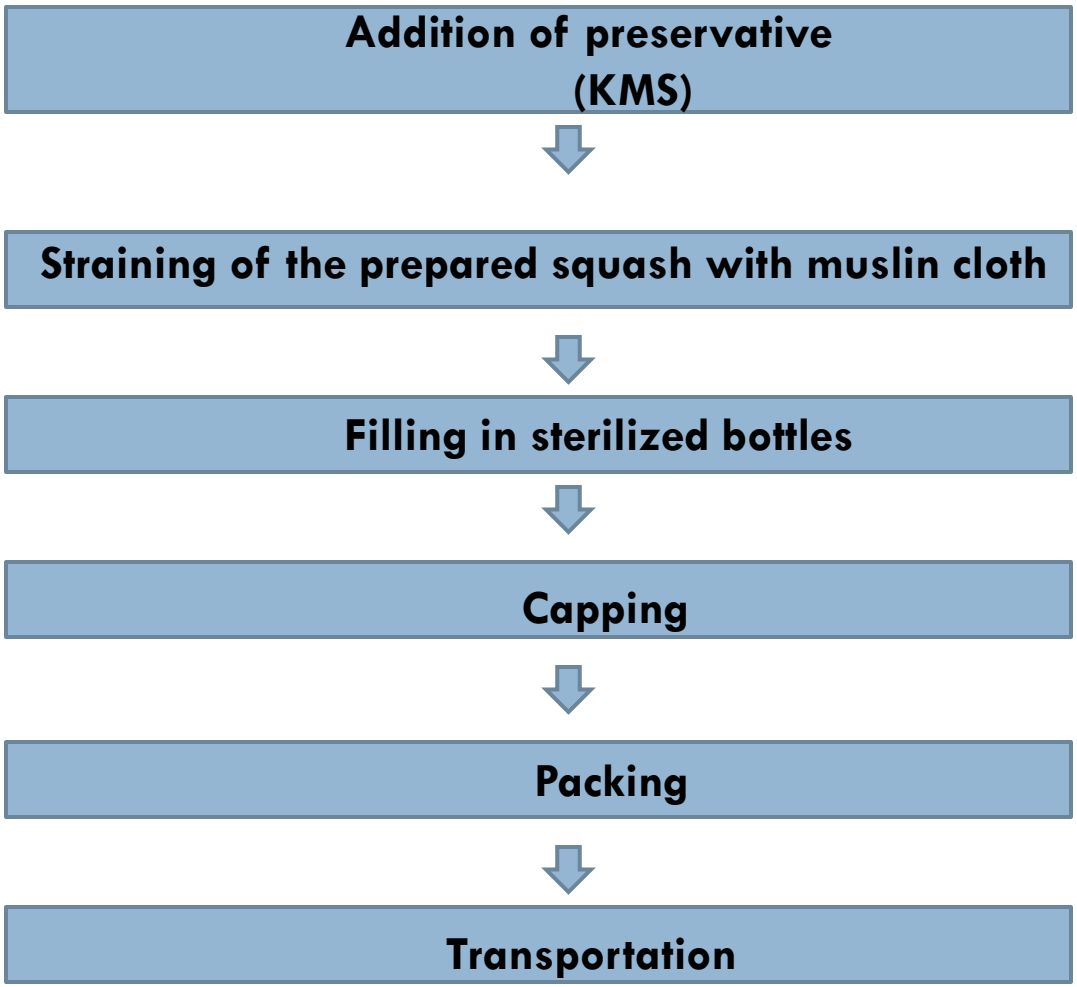
- Mint
- Rhododendron
- Litchi
- Orange
- Mango
- Bael
- Strawberrry
- Lemon
- Guava
- Amla
- apricot

Ingredients for squash making

Ingredients	Quantity
Pulp/juice	300 ℓ
water	350ℓ
sugar	450 kg
KMS	90.0 g
flavor	100 ml
Citric acid	8 kg

Steps involved




Addition of preservative (KMS)
Straining of the prepared squash with muslin cloth
Filling in sterilized bottles
Capping
Packing
Transportation

Pickle:-

The preservation of food in common salt or oil or vinegar is known as pickling.It is one of the most ancient method of preserving fruits and vegetables.

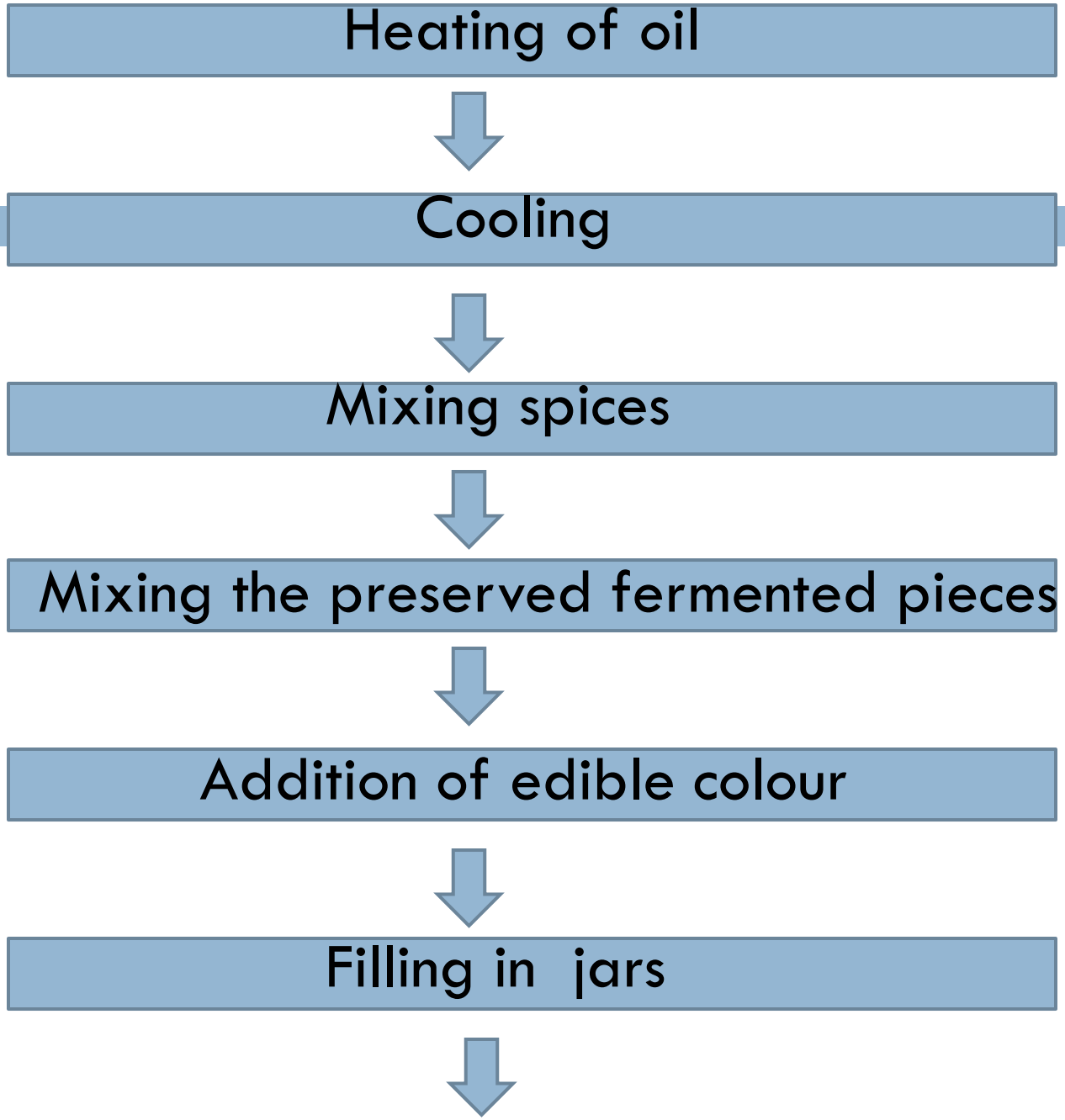
Pickles are good appetizers and add to palatability of a meal.They stimulate the flow of gastric juices and thus helps in digestion.

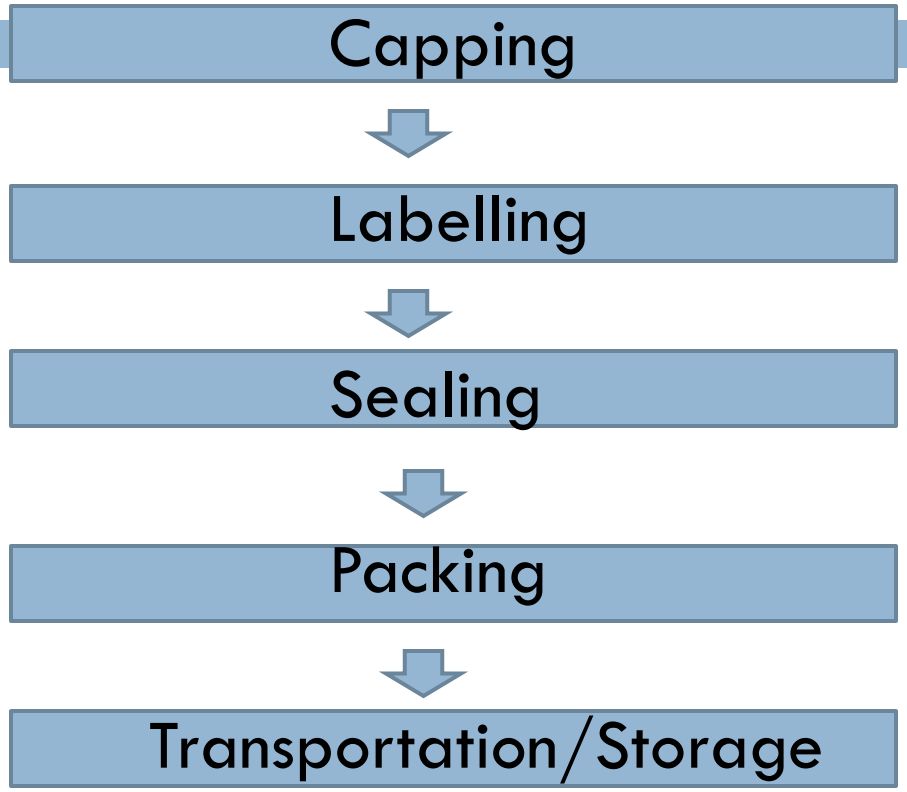
Pickling is the result of fermentation by lactic acid forming bacteria,which are generally present in large number on the surface of fresh fruits and vegetables.

- Mango Pickle
- Mushroom Pickle
- Mixed Pickle
- Chilli Pickle
- Amla Pickle
- Jackfruit Pickle

Ingredients :-

Raw Material	100 kg
Salt	15 kg
Fenugreek	2.5 kg
Turmeric	1.5 kg
Red chilli Powder	1 kg
Clove	250 g
Black pepper	1.5 kg
Cumin	1.5 kg
Asafoetida	300 g
Mustard Oil	35 l
Vinegar	1 l
Fennel	1 kg
mustard seed	500 g


Heating of oil
Cooling
Mixing spices
Mixing the preserved fermented pieces
Addition of edible colour
Filling in jars


Capping
Labelling
Sealing
Packing
Transportation/Storage


देहरादून की

Mushroom Pickle (button mushroom)

Ingredients:-

Cumin	30g
Fennel	40g
Fenugreek	40g
Mustard oil	400ml
Acetic acid	10ml
Sugar	200g
Chilli powder	50g
Salt	250g
Spice blend	20g

Steps

- Wash the mushrooms and dip in 1% KMS for 2-5 min.
- Cut the mushrooms into 4-5 pieces.
- Boil in salty water to remove harmful organisms.
- Spray salt, keep in cool and hygienic place for 12-24 hrs.
- Thoroughly mix all the ingredients.
- Transfer into glass jar
- Close with lid and set aside for 2-3 days.

Jam

- Jam is the product made by boiling fruit pulp with sufficient sugar to a reasonably thick consistency, firm enough to hold the fruit tissues in position.
- Jam contains 0.5-0.6%acid and sugar should not be more than 40 %.
- TSS of jam is 68-70%.

Ingredients

Pulp

Sugar

Pectin

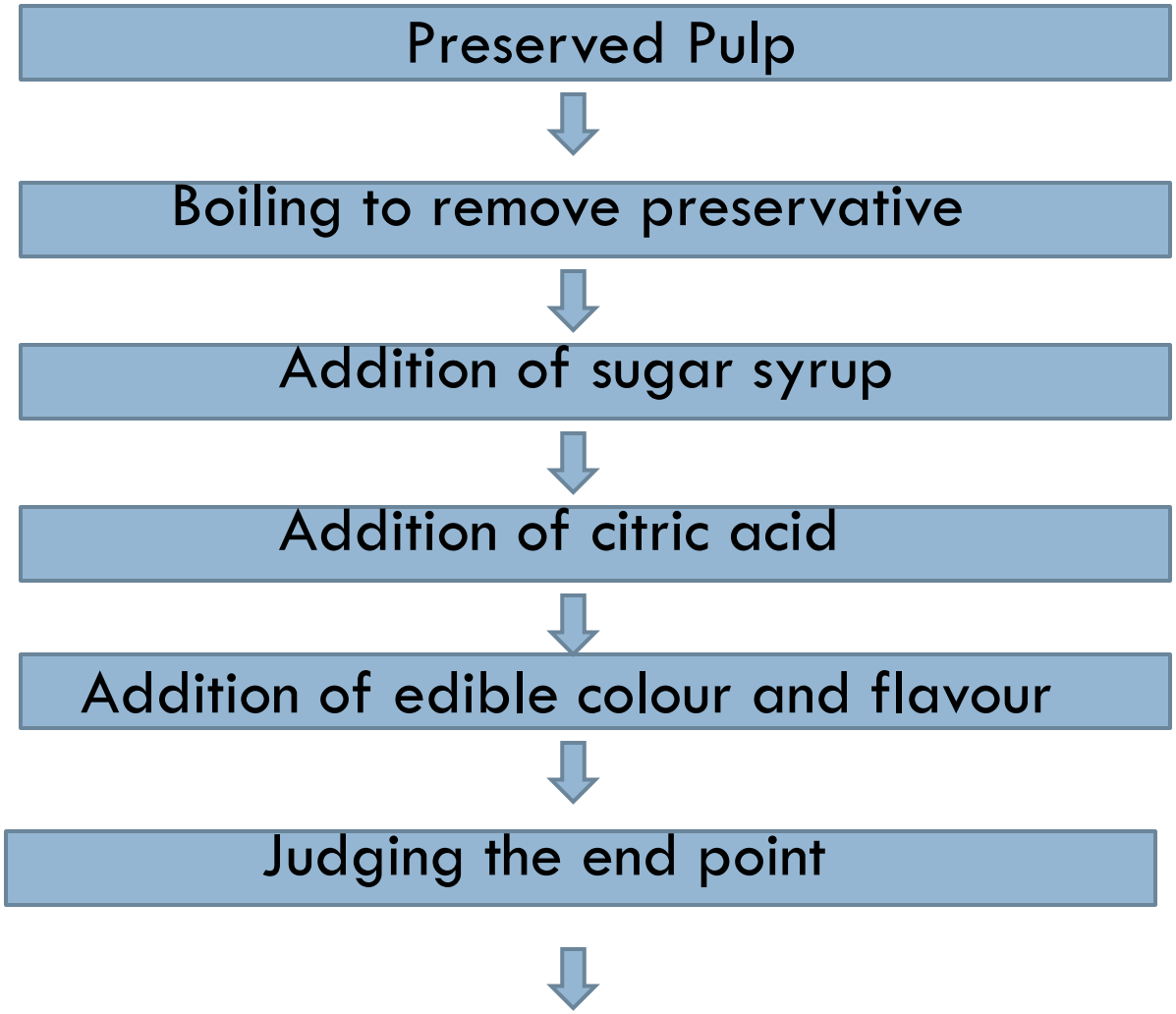
Edible colour

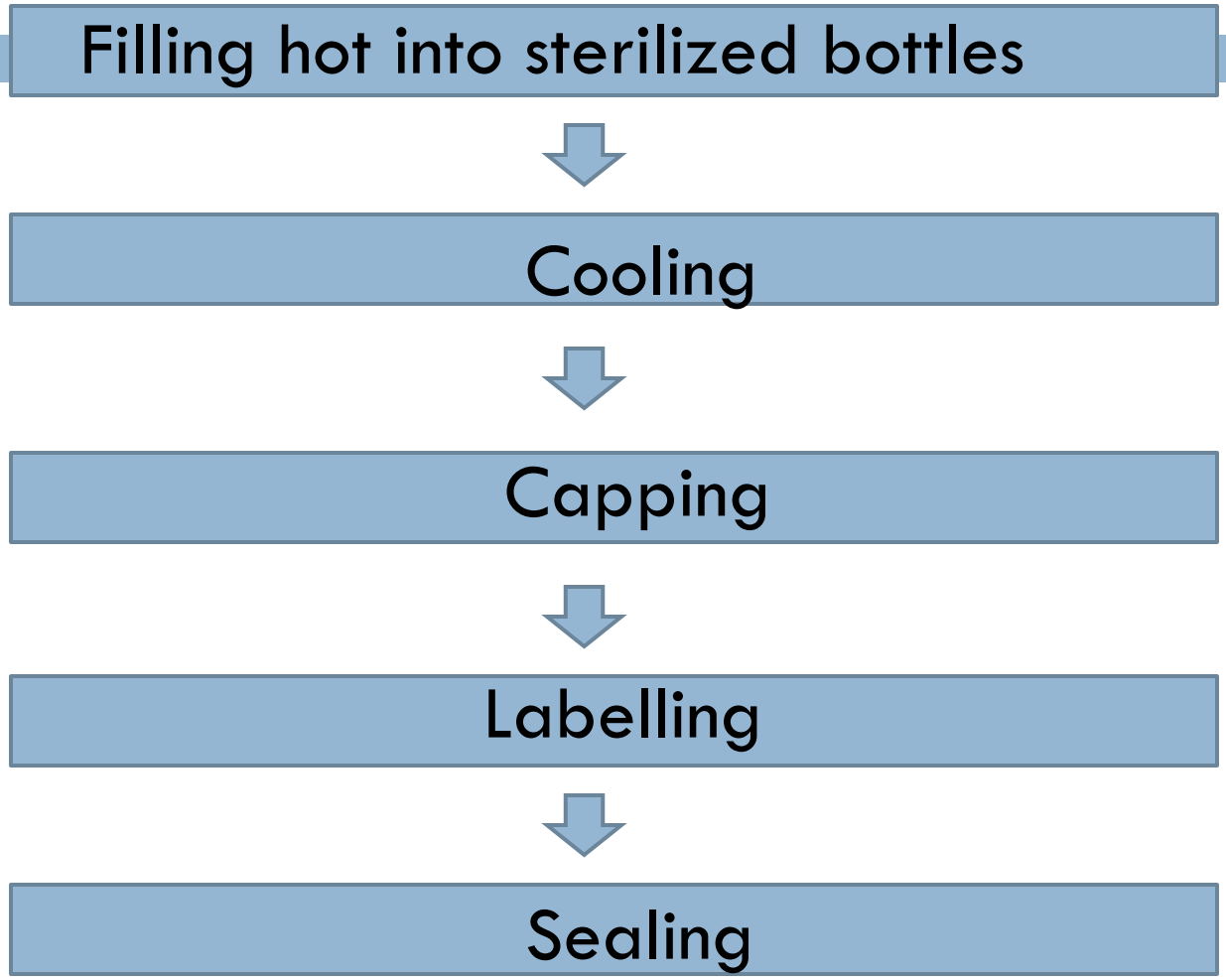
Edible flavour

Citric acid

Sodium benzoate

Steps of preparation




Filling hot into sterilized bottles
Cooling
Capping
Labelling
Sealing

Marmalade

Products made from citrus like oranges and lemons in which shredded peels are used as suspended material.

Ingredients:-

- Pulp
- Shredded lemon peels
- Pectin
- sugar
- citric acid
- Edible colour and flavour

Steps followed

- Washing of ripe fruits
- Peeling outer yellow portion i.e., flavado thinly
- Cutting yellow portion into shreds
- Take fruit pulp
- Boiling
- Straining the extract
- Testing for pectin content
- Addition of sugar
- Cooking to 103 – 105°C
- Addition of prepared shreds

- Testing for end point
- Cooling 82 – 88°C with continuous stirring
- Flavouring
- Filling in sterilised bottle
- Sealing
- Packaging
- Storing/transporting

Demonstration

Guava cheese

TSS- not less than 75%

Acidity- 0.2 - 0.7%

Benzoic acid- 200 ppm

Ingredients:-

- Pulp
- Butter/ghee
- Citric acid
- Pectin
- Sugar
- Salt
- Edible colour and edible flavour

Steps

- Boil the pulp
- Mix sugar and butter/ghee
- Stir it continuously with adding butter/ghee
- Check the end point
- Add salt, flavour and colour.
- Grease the tray with butter or ghee
- Spread prepared cheese on tray
- Cool it
- Cut into pieces
- Wrap into butter paper

Wild Apricot Oil expression


Thank You!

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