

## CHICORY PROCESSING



**AATMANIRBHAR BHARAT**

**PM Formalisation of Micro Food Processing  
Enterprises Scheme (PM FME Scheme)**

# PROCESSING TECHNOLOGY

## DESCRIPTION ABOUT THE GIVEN PRODUCT

***Cichorium  
intybus* L**

**Family-  
Asteraceae**

**Blue  
flowers**

**80-90 cm  
long  
perennial  
herb**

**Oblong,  
lanceolate,  
rosette  
leaves**



# PROCESSING TECHNOLOGY

**75 cm  
long  
roots**



**Brown(outside)  
and  
white(inside)  
roots**



# PROCESSING TECHNOLOGY

**Ovoid  
Seeds**

**Brownish  
black  
maturing  
fruits**

**Pale  
matured  
fruits**



**In India grown in-  
Tamilnadu  
Gujarat  
Bihar  
Himanchal Pradesh  
Uttarpradesh**

**Commercially seed  
produced in –  
Himachal Pradesh,  
Jammu & Kashmir,  
some hilly regions of  
Uttar Pradesh**

# PROCESSING TECHNOLOGY

## SELECTION OF VARIETIES

<b>Taxonomy</b>	<b>Cultivar Group</b>	<b>Utilization</b>
<i>Cichorium intybus</i>	-	-
<i>subsp. intybus</i>	Wild	-
<i>var. foliosum</i>	Witloof chicory	Cooked/salads
<i>var. porphyreum</i>	Pain de sucre	Cooked/salads
<i>var. latifolium</i>	Radicchio	Salads
<i>var. sylvestre</i>	Catalogne	Cooked
<i>var. sativum</i>	Cooked	Coffee substitute (roasted), inulin extracts/cooked
<i>subsp. glabratum</i>	Wild	-

# PROCESSING TECHNOLOGY

## MINERAL CONTENT OF CHICORY LEAVES AND ROOTS

Mineral content (mg/100g)	Leaves	Roots
Calcium	292.61± 13.35	181.26± 4.40
Potassium	166.57 ± 3.43	103.7 ± 4.62
Magnesium	6.944± 5.86	20.14 ± 1.69
Sodium	88.84 ± 2.58	67.42± 2.45
Iron	9.178 ± 0.85	1.77± 0.21
Copper	0.596 ± 0.06	0.362 ± 0.015
Manganese	0.904 ± 0.01	0.312 ± 0.10
Zinc	0.91 ± 0.03	0.390 ± 0.03
Lead	0.025± 0.01	0.038± 0.003

## CHEMICAL COMPOSITION OF LEAVES AND ROOTS OF CHICORY

Chemical composition	Leaves	Roots
Moisture content (%)	83.06 ± 1.55	75.63 ± 0.39
Crude protein (%)	14.70 ± 1.03	4.65 ± 0.25
Crude ether extract (%)	3.68 ± 0.19	1.69 ± 0.71
Ash (%)	10.91 ± 1.86	4.25 ± 0.11
Total carbohydrates (%)	70.71 ± 3.08	89.41 ± 1.07
Total soluble sugars (%)	7.80 ± 1.45	11.06 ± 1.00
Inulin (%)	10.95 ± 2.56	44.69 ± 0.88
Crude fiber (%)	16.78 ± 2.20	5.12 ± 1.55
Total phenolic content(mg GAE/ g dry extract)	26.4 ± 1.05	20.0 ± 0.9

## UPCOMING PROJECTED GROWTH AREAS AMONG DIFFERENT SEGMENTS IN CHICORY BUSINESS

### By type

- Instant chicory powder
- Chicory powder

### By form

- Roots (inulin extract)

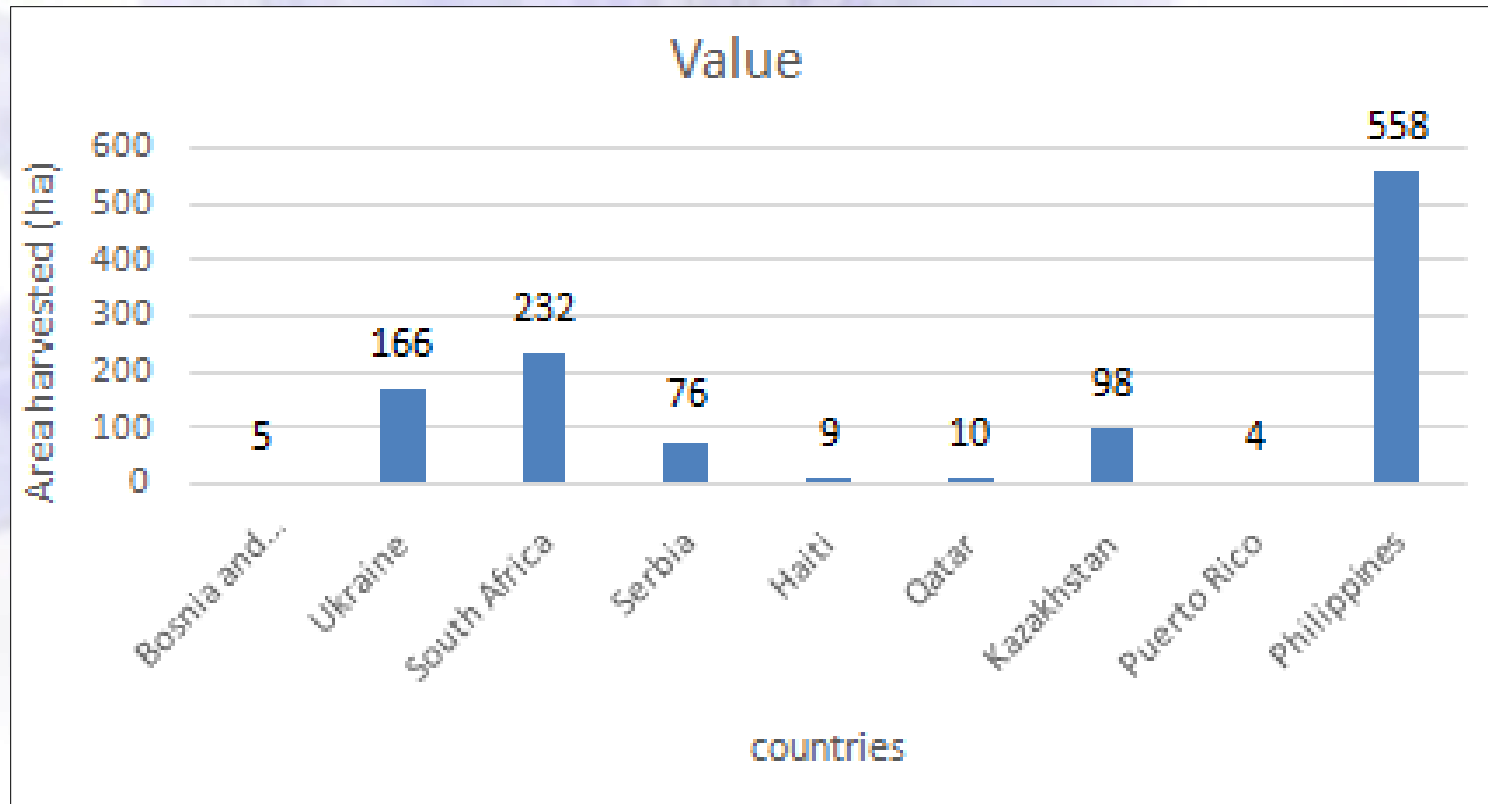
### By application

- Chicory beverage (substitute of coffee)
- Flowers and leaves (flavoured vinegar)
- Chicory flour extract (bakery products)
- Chicory leaves (salad)



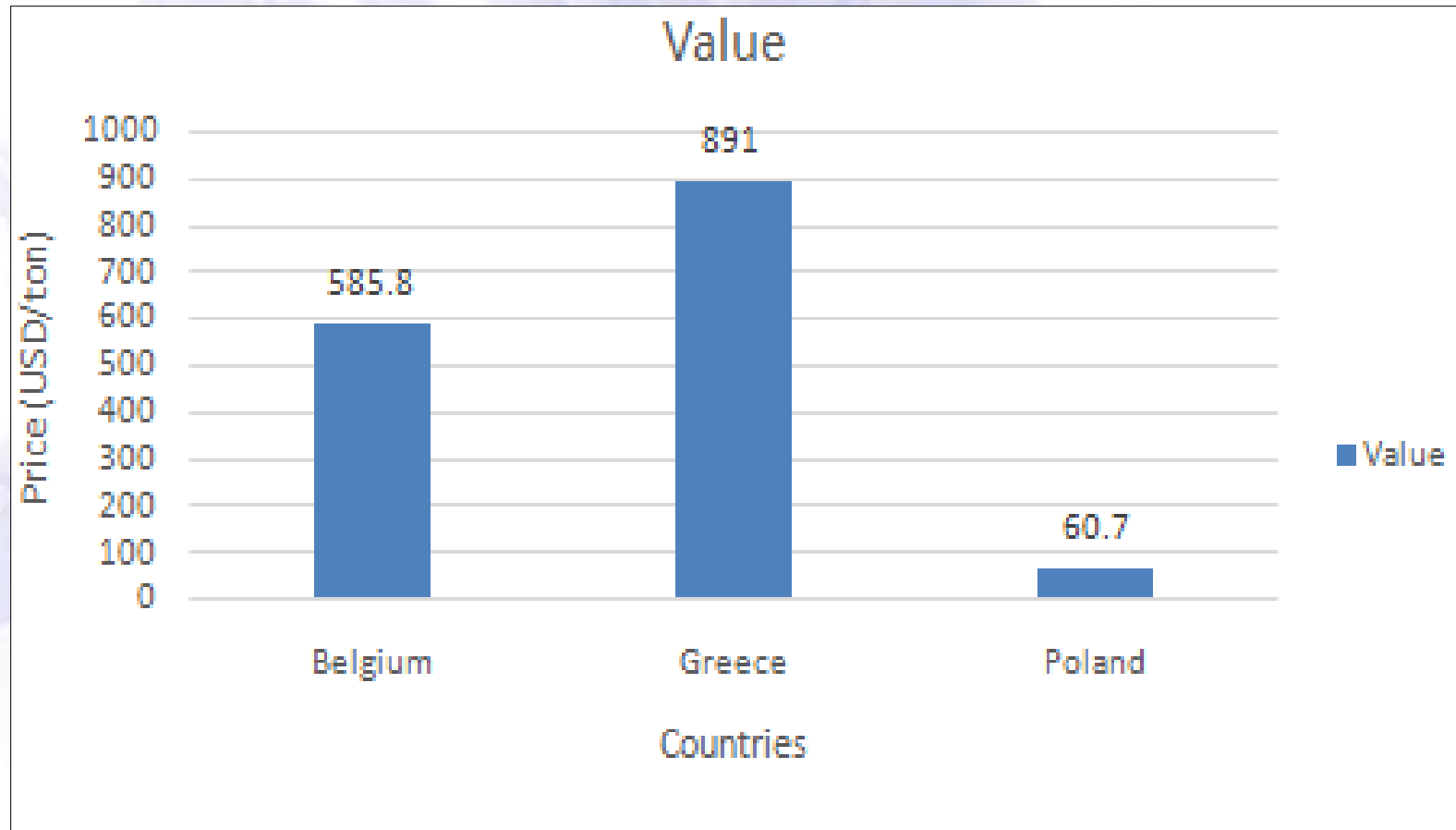
# PROCESSING TECHNOLOGY

## AREA HARVESTED (HA) OF CHICORY IN DIFFERENT COUNTRIES



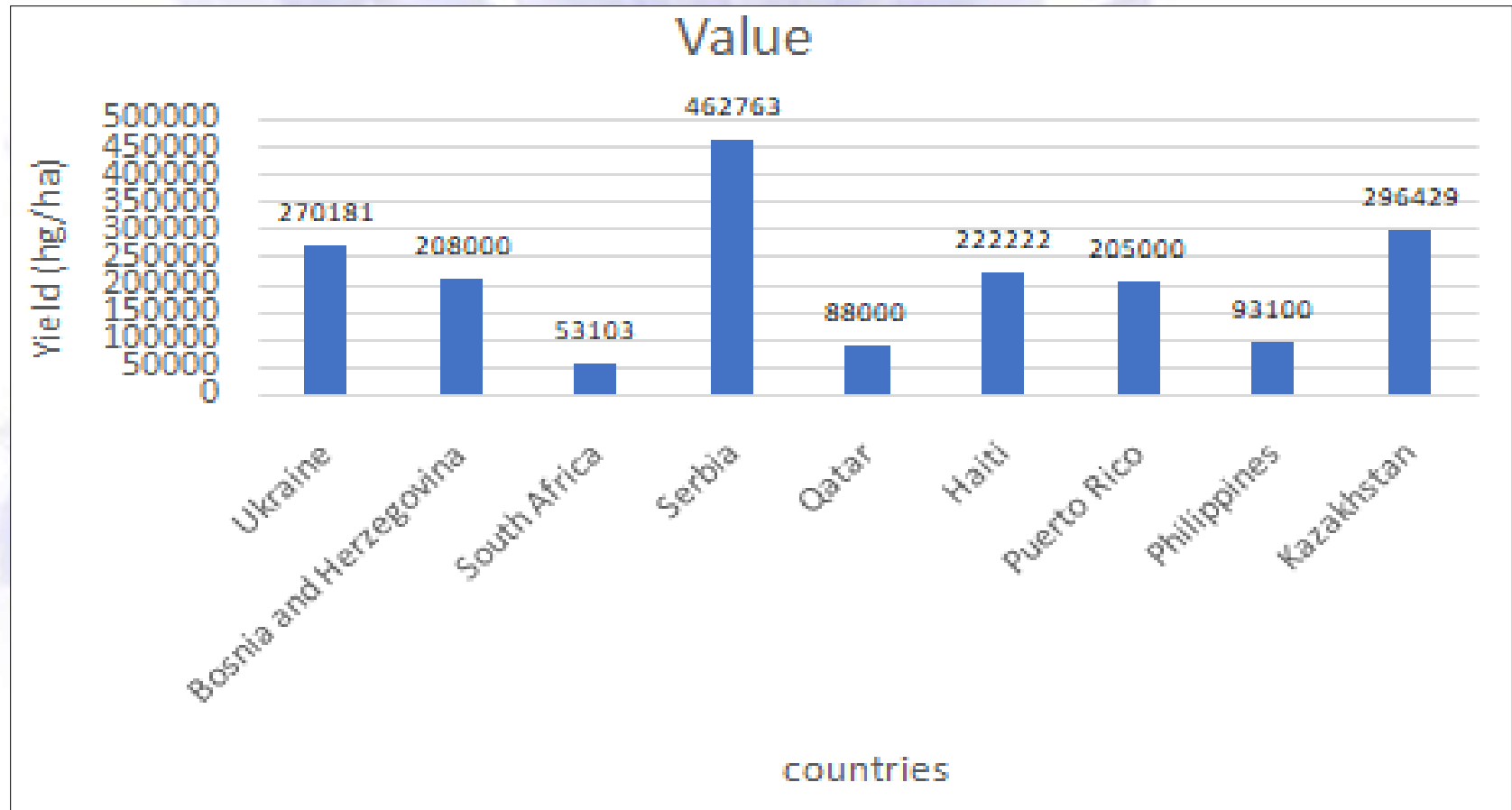
# PROCESSING TECHNOLOGY

## PRICE (USD/TON) OF CHICORY IN DIFFERENT COUNTRIES



# PROCESSING TECHNOLOGY

## YIELD (HG/HA) OF CHICORY IN DIFFERENT COUNTRIES



# PROCESSING TECHNOLOGY

## DOMESTIC AND INTERNATIONAL MARKET PLAYERS

### DOMESTIC MARKET PLAYERS

Delecto Foods Pvt Ltd

Pioneer Chicory

Murlikrishna Foods Pvt Ltd

PMV Nutrient Products Pvt Ltd

Farmvilla Food Industries Pvt Ltd

Narasu's Coffee Company

Jamnagar Chicory Industries

Herbs & Crops Overseas

### INTERNATIONAL MARKET PLAYERS

Cosucra Groupe Warcoing (Belgium)

Cargill Incorporated (US)

Sensus (Netherlands)

Starwest Botanicals (US)

NP Nutra (US)

Reily Foods Company (US)

BENEIO GmbH (Germany)

Leroux (France)

# PROCESSING TECHNOLOGY

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## PRIMARY PROCESSING/PRE-PROCESSING



## HARVESTING OF ROOTS

# PROCESSING TECHNOLOGY

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## CLEANING AND WASHING OF ROOTS

# PROCESSING TECHNOLOGY

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## GRADING AND SORTING OF ROOTS

# PROCESSING TECHNOLOGY

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## CUTTING OF ROOTS



# PROCESSING TECHNOLOGY

## PROCESSED PRODUCTS-



**Chicory powder**



**Instant chicory coffee**



**Granulated chicory coffee**



**Inulin extract**



**Chicory wine**

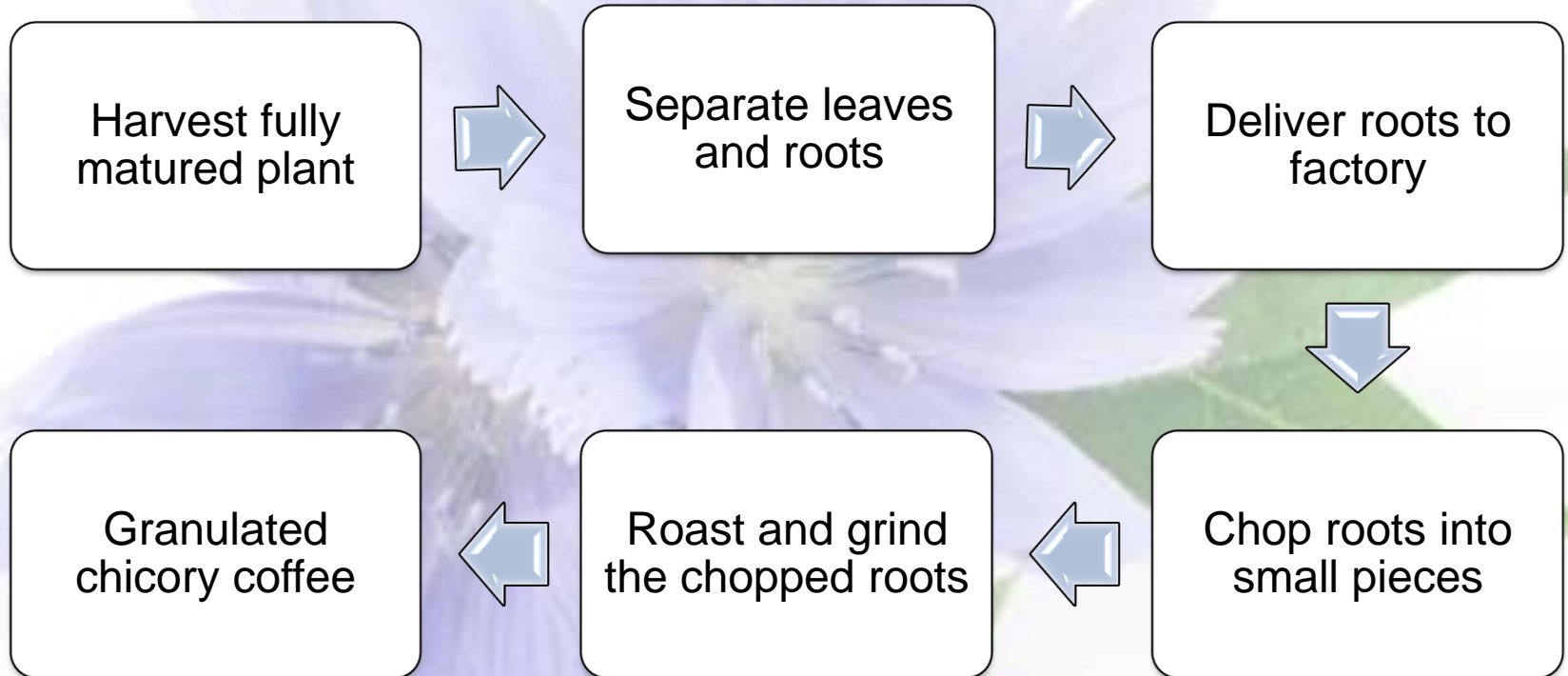


## GRANULATED CHICORY COFFEE



# PROCESSING TECHNOLOGY

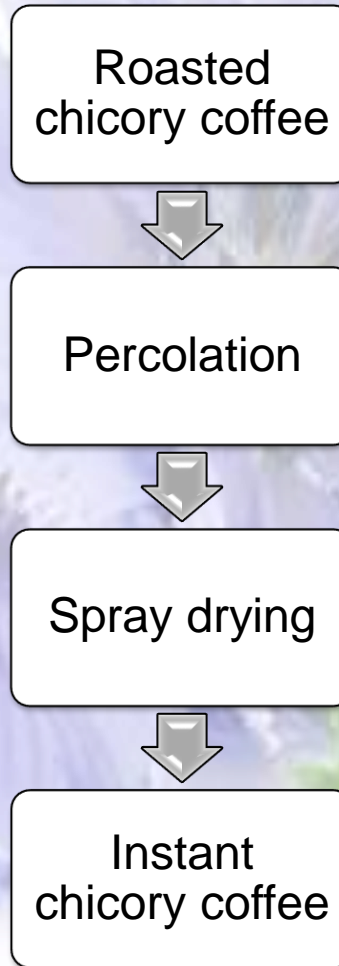
## GENERAL FLOW CHART FOR PREPARATION OF GRANULATED CHICORY-COFFEE



## INSTANT CHICORY COFFEE



## GENERAL FLOW CHART FOR PREPARATION OF INSTANT CHICORY-COFFEE

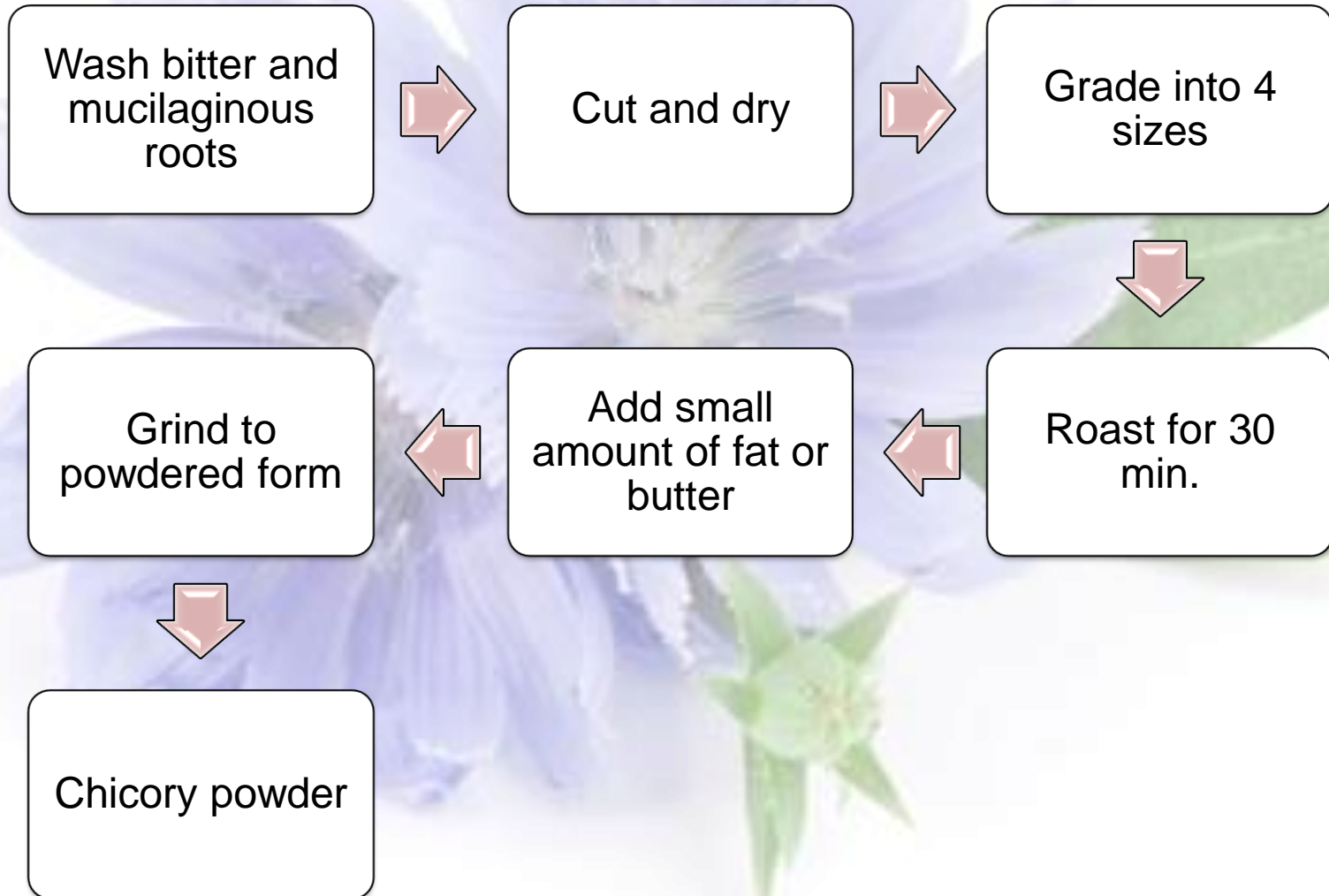


## CHICORY POWDER



# PROCESSING TECHNOLOGY

## GENERAL FLOW CHART FOR PREPARATION OF CHICORY POWDER



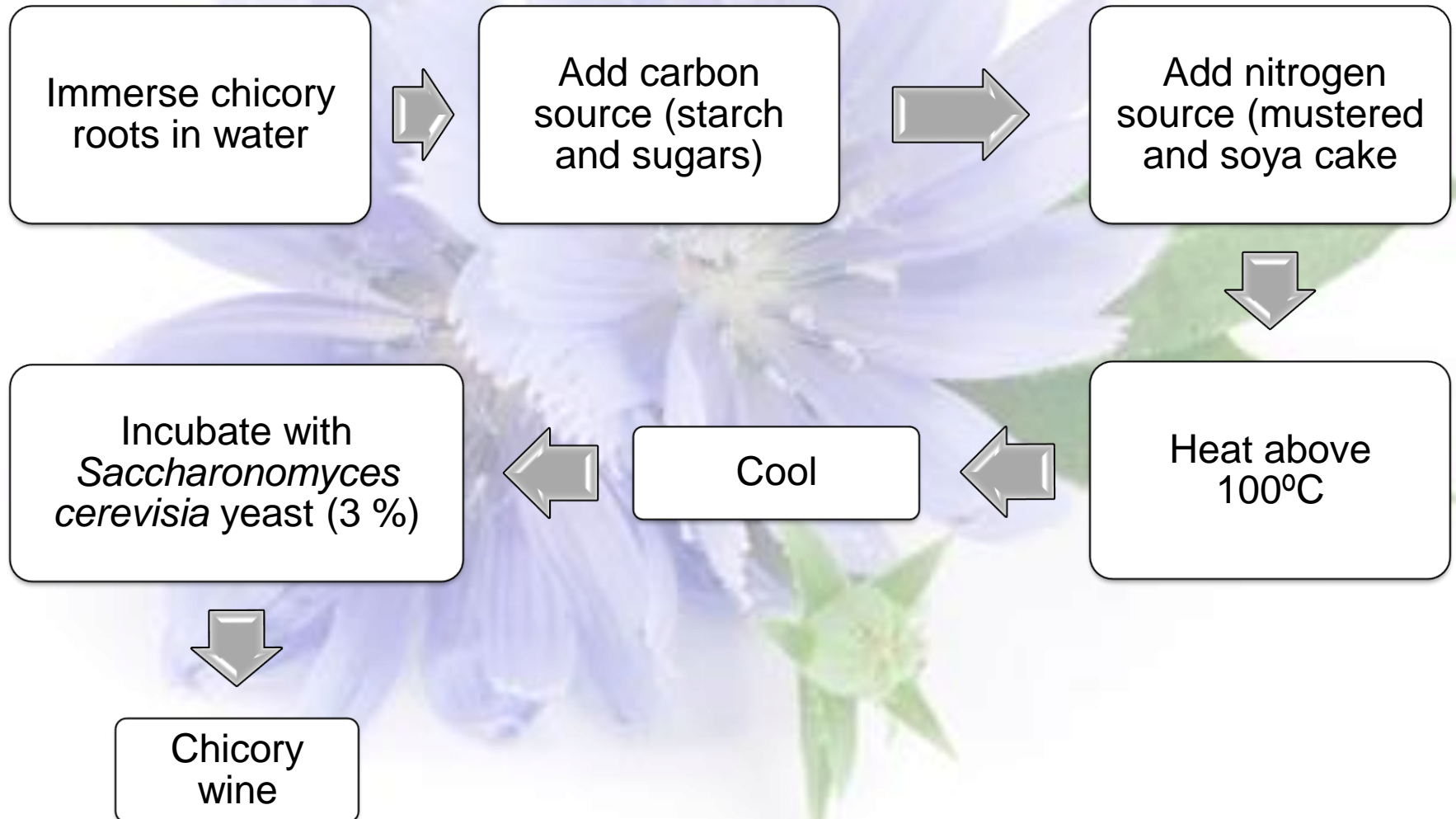
## CHICORY WINE





# PROCESSING TECHNOLOGY

## GENERAL FLOW CHART FOR PREPARATION OF CHICORY WINE

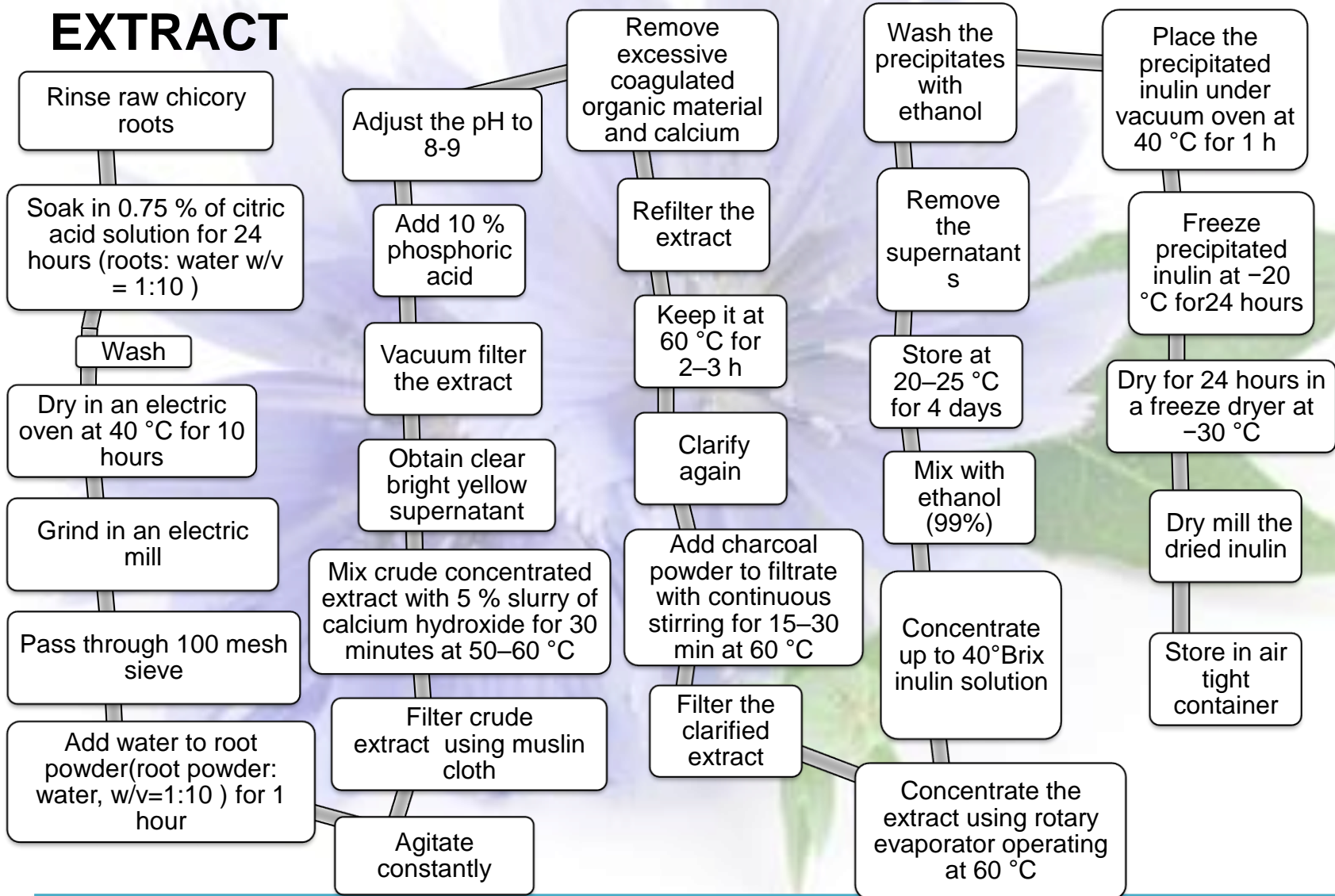


## INULIN EXTRACT



# PROCESSING TECHNOLOGY

## GENERAL FLOW CHART FOR PREPARATION OF INULIN EXTRACT



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