



Primary Processing of Table Olives

Any process of debittering and preserving the table olive - Soaking in water and brining, fermentation, dehydration (heat, salt)

Secondary Processing

The embellishment of primary processed table olives - pitting, stuffing, cracking, herbs, spices, marinades, olive pastes and tapenade

Primary Processing of Table Olives

- Lye-cured
- Water-cured olives packed in brine
- Spontaneously fermented olives
 - Black- Greek
 - Green- Sicilian
- Dried olives - dehydrated - *heat or salt dried*

Table Olive Processing Equipment

All equipment used should be:

- suitable for food processing
- made from either
 - food grade plastic
 - food grade fibreglass
 - food grade stainless steel that can resist corrosion by salt and/or food acids

Do not use equipment made from:

- Aluminium
- Wood
- Galvanised iron/steel

Table Olive Ripeness Levels

Green Ripe - Flesh and skin is straw coloured

Turning Color - Skin is multicoloured or lightly pigmented

Nearly Black Ripe - Black/violet skin with flesh partly pigmented - best for natural black olives, because flesh is relatively firm

Fully Black Ripe - Black/violet skin with flesh fully pigmented - best for heat dried or salt dried black olives

Kalamata olives at different maturation stages
Greece - Medium size, fleshy, freestone, low in polyphenols



Spanish Style

- Start with green (straw colored olives)
- Treat with lye until $\frac{3}{4}$ the way to the pit
- Change 3-4 times until not soapy
- Add starter culture
- Store at 70 to 90 degrees
- Will take 2 to 6 months
- May need to add sugar to (Manzanillo or Mission) 1.5 to 2 teaspoons/gal to increase fermentation

Water Cured Olives

Advantage

- Short Processing Time

Disadvantages

- Method involves the use of large amounts of water
14 water changes
- Olives have poor organoleptic characteristics
 - Soft
 - Lack color
 - Lack flavor
 - Lose nutrients
 - Need embellishing to be tasty

Water Cured Olives

- **Method**
- Whole/slit/cracked olives green/black TC
- Pack into containers
- Add potable water
- Seal container
- Change water daily
- After 10-14 days add 10% salt brine
- 10% brine = 1kg/10litres, 12.8 oz/gal
- Allow to equilibrate
- Taste to ensure processing is complete

Water Cured Kalamata Olives



Lack Colour and Flavour



Slit Kalamata Olives

Cracked Raw Manzanilla



What is Fermentation

- Fermentable Substrates eg sugars glucose, fructose
- > Fermentation products eg lactic acid, acetic acid, alcohol (ethanol)
- Microorganisms are involved
- Untreated olives - natural spontaneous fermentation by yeasts and lactic acid bacteria
- Acid formed during fermentation + Salt preserve the olives

Brine Cured Olives - 1

- **Method**
 - Whole/slit/cracked olives
 - Pack into containers
 - Add 10% salt brine
 - 10% brine = 1kg/10litres, 12.8 oz/gal
 - Loosely seal container
 - Gas is produced over 4-5 days
 - When gas production stops fill container to brim and seal tightly
- **Fermentation**
 - pH falls from 6.5 to 5
 - pH and salt levels fall progressively over 3-4 weeks
 - Maintain pH between 4 to 5 and salt at 6%
 - Olives continue to debitter
 - Black = 3 months
 - Turning = 6 months
 - Green = 12 months

Brine Cured Olives - 2

- **Method**
 - Taste to ensure processing is complete Pack olives into jars
 - Add a brine with 6 -7% salt/20% vinegar
 - Add embellishments
 - - Herbs
 - - Spices
 - - Olive oil
 - Pasteurise (optional)
 - Crisp texture
 - Slightly bitter taste

Brine Cured Olives - 3

Commonly used process in countries around the Mediterranean Basin and the Middle East.

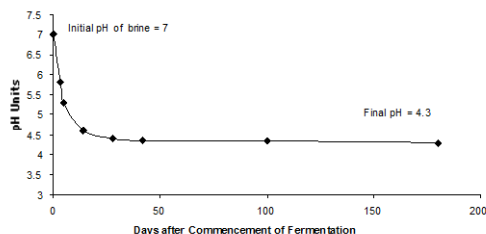
Olives are eaten straight out of the brine without embellishment.

Green - Sicilian Style Green olives (with Sicilian varieties or Sevillano in the US)

Turning Colour - Ligurian Style (with Italian varieties i.e. Frantoio)

Black - Greek Style olives (with Greek varieties- Kalamata or Mission)

Typical Changes in Brine pH During Spontaneous Anaerobic Fermentation of Untreated Raw Olives



Manzanilla TC by Fermentation in Brine



Manzanilla olives fermented in brine

Kalamata Olives by Fermentation in Brine



Processed Kalamata Olives



Processed Kalamata Olives

After Exposure to Air + Olive Oil

Secondary Processing

Primary Processed Olives

- Mixed varieties/maturation states
- Cracked
- Pitted - whole, halved
- Stuffed
- + Vinegar
- + Olive Oil (or seed oil)
- + Herbs/spices
- Olive pastes and tapenade

Black Kalamata + Green Barnea + Herbs and Spices



Brine Fermented Verdale then Cracked

Bruised Olives (Cracked) - Using Processed Olives

- **Method**
- Bruise processed olives (green/TC/black)
- Pack into containers
- Add embellishments
 - herbs
 - spices
 - olive oil
- Add acid/brine with 6% salt and 20% vinegar
- Acid/ Brine = 800ml of 7.5% salt (75g/litre) + 200ml vinegar = 1 litre
- Ready to eat in a short time
- With green olives + fennel, garlic and olive oil - traditional Sicilian style olive



Manzanilla Freestone

Turning Colour Olives in Brine



Ripe Kalamata Olives in Brine with Herbs



Adding Vinegar

Types of Vinegars - Chemical, grape, malt, honey, cider (Balsamic)

Black olives - Red wine vinegar

Green and TC olives add light coloured vinegar

Strength of Acetic Acid in Vinegars = 5-6%v/v

Add

10% w/v salt brine (3parts) + Vinegar (1part) = 1.25% Acetic Acid

Why add vinegar?

Antimicrobial - several actions

Flavour

Antioxidants - polyphenols

Solvent for herbs and spices - acetic acid, alcohol



**Pitted and Stuffed
UC13A6**

Herbs and Spices

Fresh Herbs and Spices

- Suitable for fresh olive products to be consumed within 7 days stored under moderate refrigeration
- Do not add herbs and spices at the primary processing stage

- Can introduce anomalous microbes - Food poisoning, spoilage

Dried Herbs and Spices

- Suitable for marinades
- Use whole or chopped
- Shelf life is reduced compared to primary processed olives

Mediterranean Dried Herbs

Basil - Italian
Oregano - Greek
Garlic - Greek, Sicilian
Fennel - Sicilian
Rosemary - Greek
Marjoram - Greek
Parsley - Italian
Sage - Greek
Thyme - Greek
Chilli - Italian





Olives Mixed After Processing + Fetta Cheese and Herbs



Leccino Black - Provencale - Garlic, Rosemary, Chilli + Olive Oil

Table Olive Recipes 1

Calabrese Green Cracked Olives

Processed green cracked olives	Approximately 1kg
Chopped garlic	20g
Chopped oregano	5g
Crushed dry red chilli	5-10g
Chopped fennel	5g
Whole roasted fennel seeds	5g
Extra virgin olive oil	80mL

Chilli Garlic Marinated Mixed Olives

Processed green and black olives	Approximately 1kg
Chopped garlic	20g
Dried Italian mixed herbs	5g
Crushed dry red chilli	5-10g
White wine vinegar	40mL
Extra virgin olive oil	80mL

Table Olive Recipes 2

Nicoise Olives (Fennel and Orange Scented Olives)

Processed small black olives*	Approximately 1kg
Chopped orange rind	10g
Dried fennel flower or seed	10g
Chopped garlic	20g
Extra virgin olive oil	80mL

* *Picholine, Frantoio, Leccino or Koroneiki varieties***Oriental Style Olives**

Processed green olives	Approximately 1kg
Quarter slices of orange	4 pieces
Quarter slices of lime	4 pieces
Chopped lemon grass	5g
Chopped ginger	5g
Cracked coriander seeds	5g
Chopped chilli	5g
Chopped garlic	20g
Extra virgin olive oil	80mL

Tapenade

- It is an olive paste popular around the Mediterranean region, especially in France
- It is used as spreads and dips.
- Its basis is ground flesh of processed green, turning colour, or black olives to which capers, anchovies and other foods and spices are added.

Addition of **capers** differentiates tapenades from other olive-based pastes.
Olive oil - preferably extra virgin olive oil

Other ingredients that are often added

Garlic, salted anchovies (or tuna), lemon juice, Cracked pepper

Aromatics - herbs and spices

Foodstuffs - pine nuts, chilli, sun dried tomatoes



Method for Making Tapenade

- Destone processed olives or use commercial destoned olives
- Drain destoned olives if required
- Rinse olives with potable water
- Check that there are no stones or fragments
- Place the olives, anchovies (if included), capers and garlic into the food processor
- Apply short sharp impulses to the mixture to give a moderately coarse paste
- Add sufficient olive oil and mix in to give a slightly granular firm paste (*Not runny*)
- Pack into containers and pasteurise (or bulk pasteurise)
- Send samples to laboratory for testing

Tapenade Recipe to make approximately 1kg

Destoned processed black olives (drained) 900g
 (destoned green or turning colour olives can be used)
 Capers (drained) 180g
 Garlic (equivalent to 15 fresh cloves) 6 grams
 Extra Virgin Olive Oil GMP*
 Cracked pepper to taste

* Sufficient olive oil is added to give the desired consistency. Also anchovy fillets can be added

Note: Tapenades containing seafood or nuts may cause allergic reactions in susceptible consumers so containers should be labelled with appropriate warnings.