Consumer Education
VCO Processing Methods
(Dry & Wet Methods)

COCO•SCIENCE™
NUTRITION

Premium ANH-VCO

(100% Absolute No Heat Process)

www.cocoscience.com

Consumer Education on VCO…

- Learn what to look for in good quality VCO.
- Learn basic processes involved in producing VCO.
- Know how VCO production processes affect VCO quality characteristics and therefore, prices.
- Difference between Premium ANH and others.
- Why is **CocoScience Premium ANH-VCO** different :- safe for raw consumption, fine quality, 24-hour processing, no added chemicals, enzyme, bacteria, 100% true no heat process, potent dual benefits of micronutrient plus lauric acid.

Questions Consumer Ask…1

- **How do I know which VCO to buy?** Choose reputable brand & supply source, proper labeling, preferably Premium ANH grade for raw consumption.

- **Why are some VCO cheap and others so expensive, especially Premium ANH VCO?**

  Premium ANH VCO is difficult to produce. Premium grade coconut is used. The process is quite tedious due to various measures undertaken to ensure quality parameters are met. Contains potent natural micronutrient plus lauric acid. Low price = low grade.

Questions Consumer Ask…2

- **Is VCO from volcanic area better?** Volcanic soil is rich in minerals which increases the production of more coconuts per tree. Minerals are water soluble and found in the flesh and water portion of the nut. They are not oil soluble hence not available in VCO.

- **Why is the logic of saying VCO is highly stable but still packed in brown bottle to prevent oxidation?** Good quality VCO is highly stable and is usually packed in colorless bottle. They will not oxidize even when exposed to occasional sunlight. If the quality of the VCO is questionable, then it is better to pack in brown bottle as an insurance.

Prevailing Standards on VCO…1

- **VCO Definition…**
  - Oil from fresh, mature kernel coconut.
  - By mechanical or natural means.
  - With or without the use of heat.
  - No chemical refining, bleaching or deodorizing.
  - Suitable for human consumption without further processing.

Prevailing Standards on VCO…2

- **Ranges of Fatty Acid composition..**
  - Lauric acid (C12) – min 45/max 53%
- **Quality Characteristics..**
  - Clear & Near Colorless (1 Yellow 0.1 Red)
  - Sediment free
  - Natural fresh coconut scent
  - Free from rancid odors or tastes

Prevailing Standards on VCO…3

- **Property requirements..**
  - Moisture 0.30% max.
  - Free Fatty Acid as lauric (C12) 0.30% max.
  - Peroxide Value 3.0 meq/kg max.
  - Food Additives – NOT PERMITTED.
  - Processing Chemical, Enzymes & Bacteria – None.

Labeling Details…

Ministry of Health Malaysia :- Food Act 1983 & Food Labeling Act 1985..

- Name of Product: Virgin Coconut Oil.
- Brand or Trade Name (optional).
- Net Content.
- Name and Address of manufacturer and/or packer, distributor.
- Country of manufacture.
- Nutritional Information.
- Type of Process (optional locally).
- Expiry Date.
- Bar code (optional).

Consumer Feedback…

1. Mostly on physical characteristics :- Premium VCO clear glass bottle – rich taste, General VCO brown glass or plastic bottle – bland taste. Appearance - clear oil . Odors - light, strong, smokey or sour depending on quality.

2. How can VCO benefit me :- The immediate effect and long term effect of consuming VCO. Better resistance against sickness, improve immune system, better absorption of food nutrients, etc.

Sensory Quality Criteria For Food and Skin Care VCO…

Preferences

- Feel: Light to Medium, easily absorbed by the skin.
- Taste: Not Rancid, fresh coconut aroma, smooth.
- Smell: Fresh coconut, Not Burnt, not Sour.
- Pure: Unadulterated clear liquid.

VCO As "Advertised"……

What the Consumers Are Looking For?

- **Least Processed, Least Heat Applied.**
- **All Natural, No Additives but UNSURE about added enzyme & bacteria.**
- **Fresh, Matured Nuts.**
- **Chemical Characteristics – lauric acid? What's that?**
- **Micro-nutrients (Vitamin E).**
- **Sensory Characteristics..**
  - Fresh Coconut Taste.
  - Fresh Natural Coconut Aroma.
  - Light and Non-Greasy.

VCO Production Processes

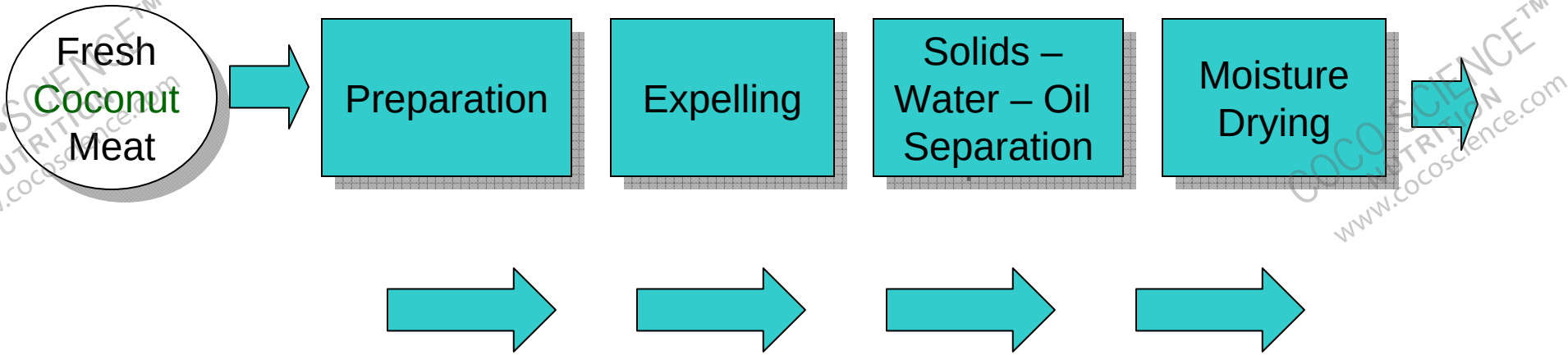
Cold Pressed, Cold Processed, Dry Process, Wet Process, Low Heat ...

CONFUSED?

Objectives of VCO Producers

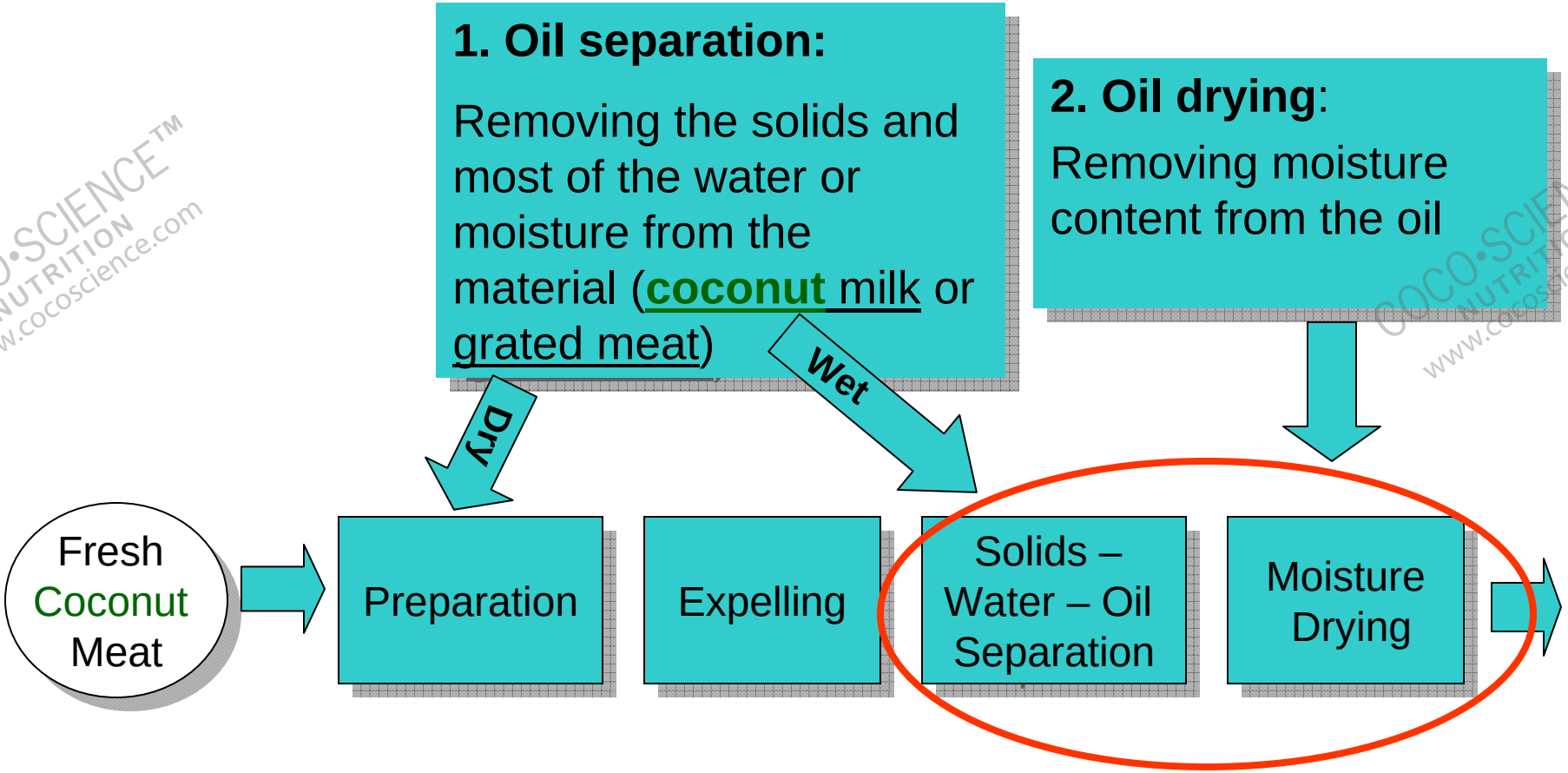
Objectives	Why?
1. Process in shortest time possible	Freshness, palatable, Less fermentation / oxidation
2. Reduce moisture to 0.30% (standard)	Longer shelf-life, avoid rancidity
3. Apply least possible heat	Preserve natural potency of Vitamin E
4. Maximize oil extraction from nut (No. of Nuts / L); Recovery of By-Products	Profitability, Lower Costs

Standard Theoretical Process Route for coconut oil extraction…



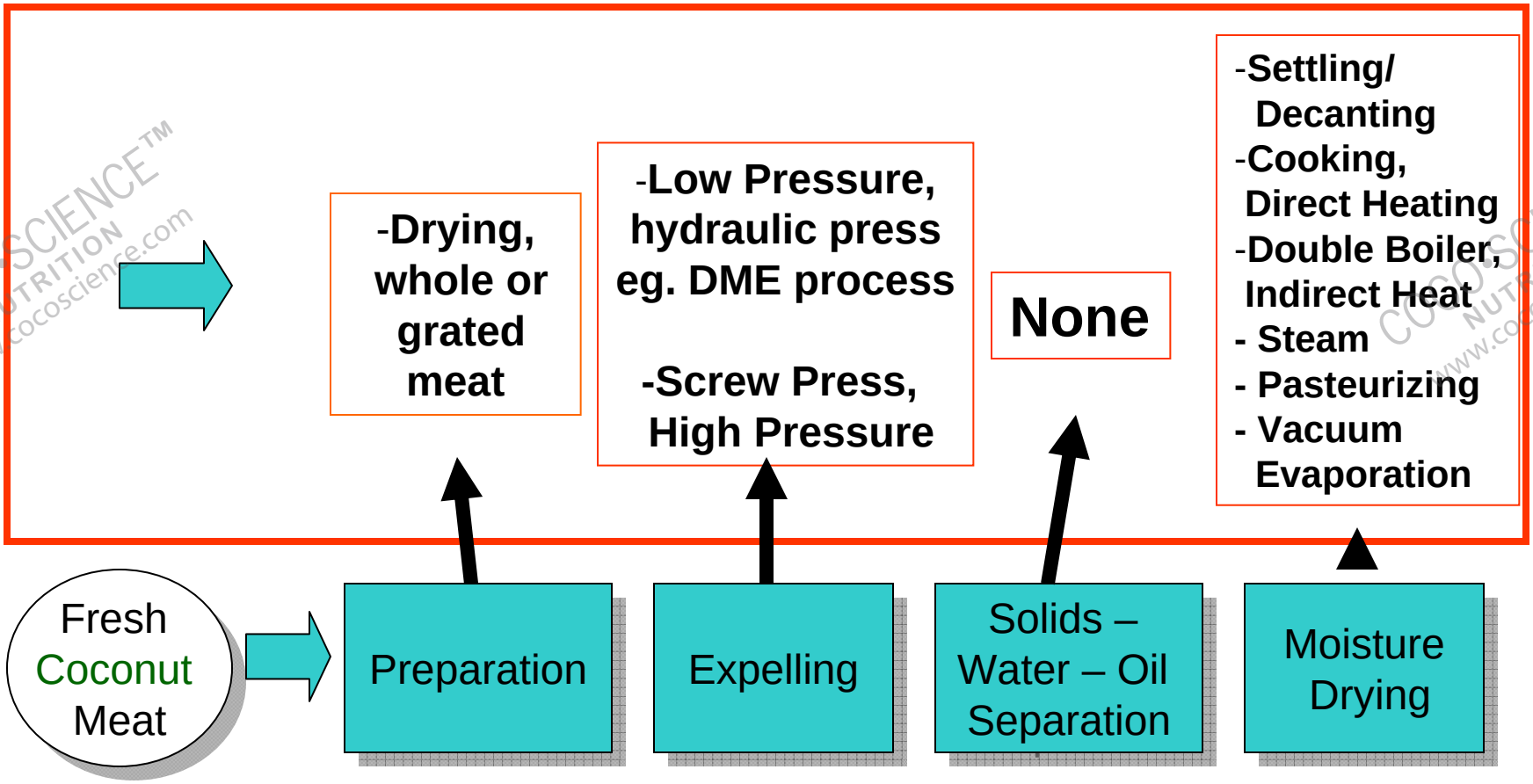
Standard Theoretical Production Process Routes – Dry or Wet methods

Two Basic Issues – oil separation & drying…



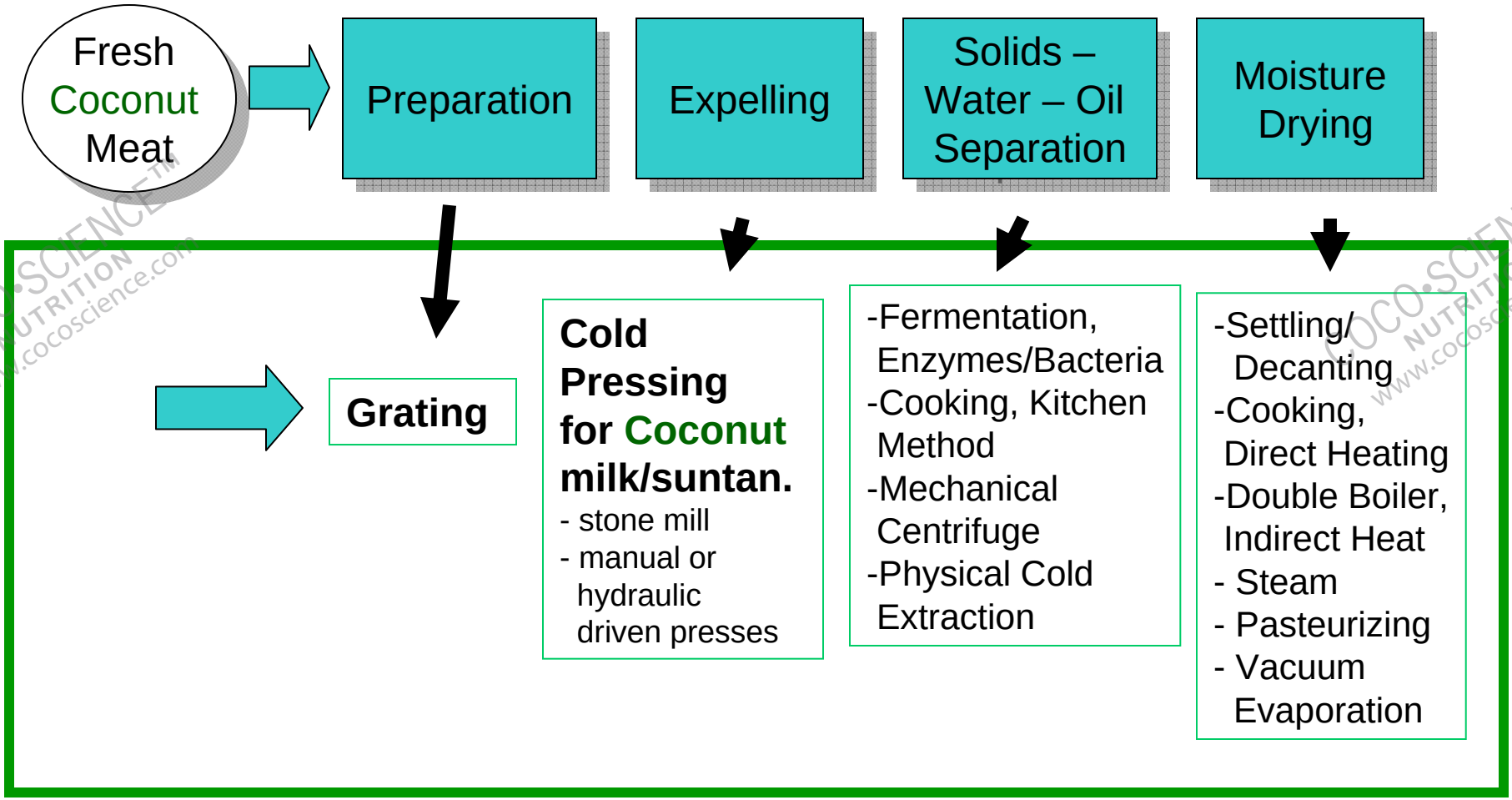
Actual Fresh Coconut Oil Extraction DRY Method

1. Dry Process (taking oil out of dried kernel meat).



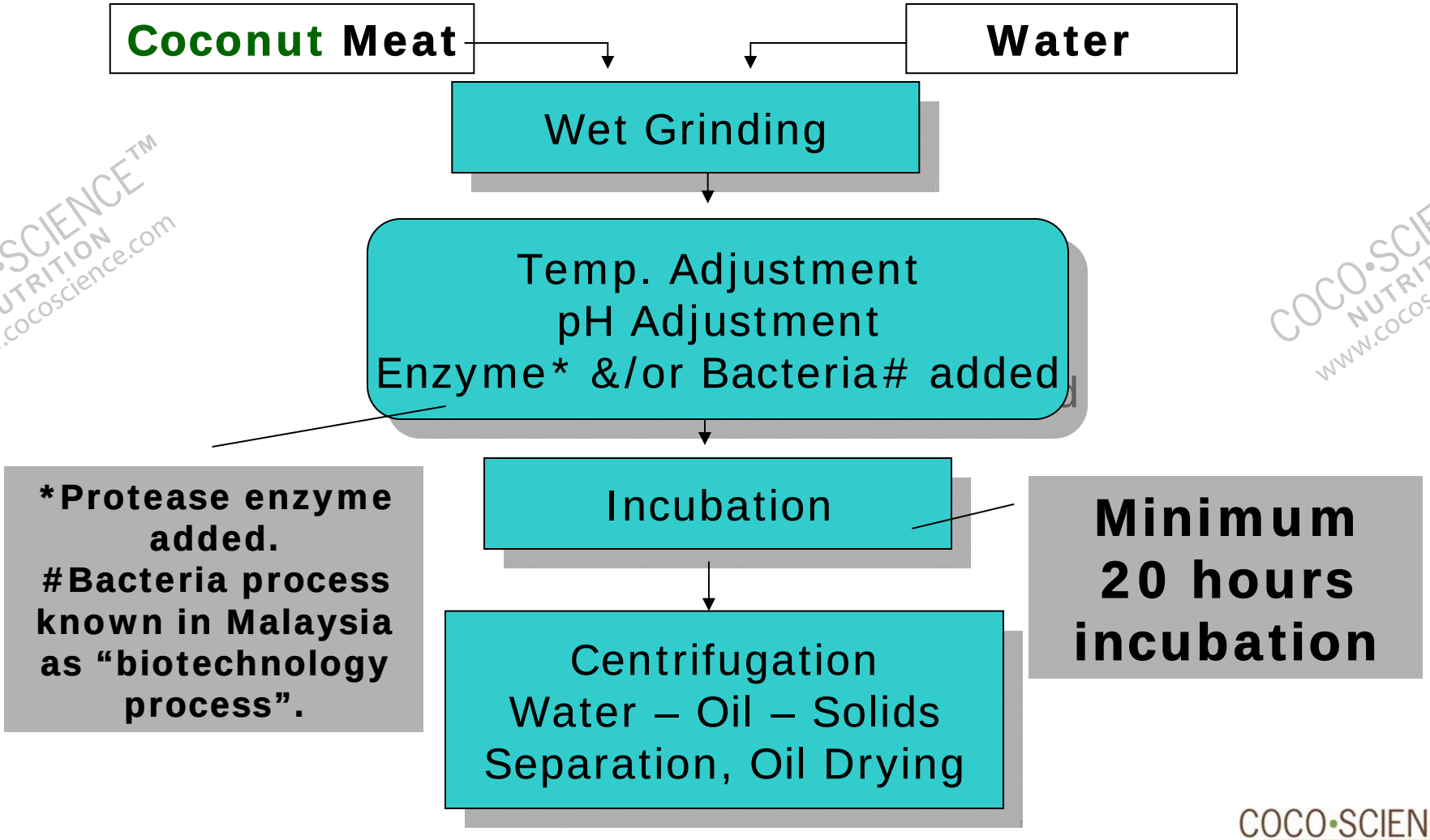
Actual Fresh Coconut Oil Extraction WET Method

2.Wet Process (taking oil out of coconut milk).



Actual Fresh Coconut Oil Extraction WET Method

3. Added Enzyme/Bacteria/Additive/Chemical Process (reaction to dislodge oil from coconut milk complex).



Cold Pressed & Cold Processed VCO?

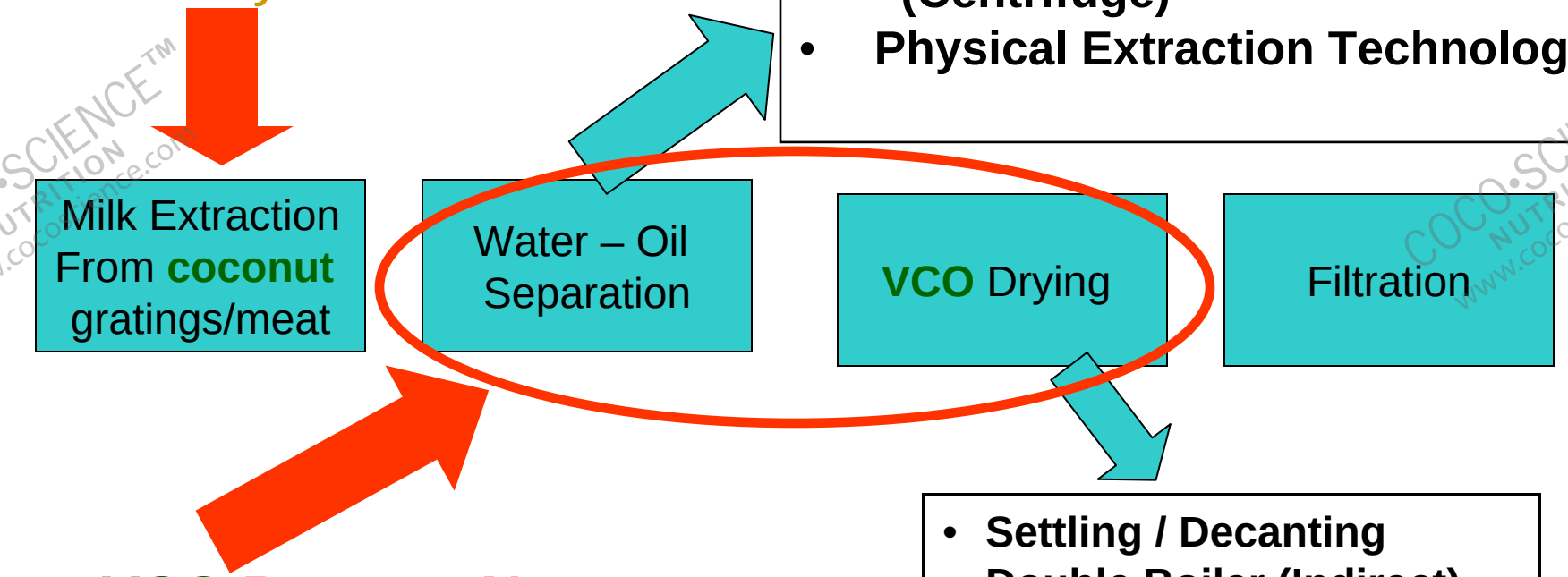
Cold pressed applicable to coconut milk extraction only. The rest of processing may be called cold processing. Some heating is needed to remove latent water from final oil, unless it is ANH. True cold processed means absolute no heat throughout the whole process and will be labeled as ANH VCO, which is safe for raw consumption.

You Decide!

Cold Pressed and/or Cold Processed VCO

Applicable only in Wet Process via Coconut Milk…

COLD Pressing
Applicable HERE only



VCO Process Name …
Cold Pressed &/or Cold Processed (ANH) VCO.
Eg. Physical Extraction, Centrifuge, etc.

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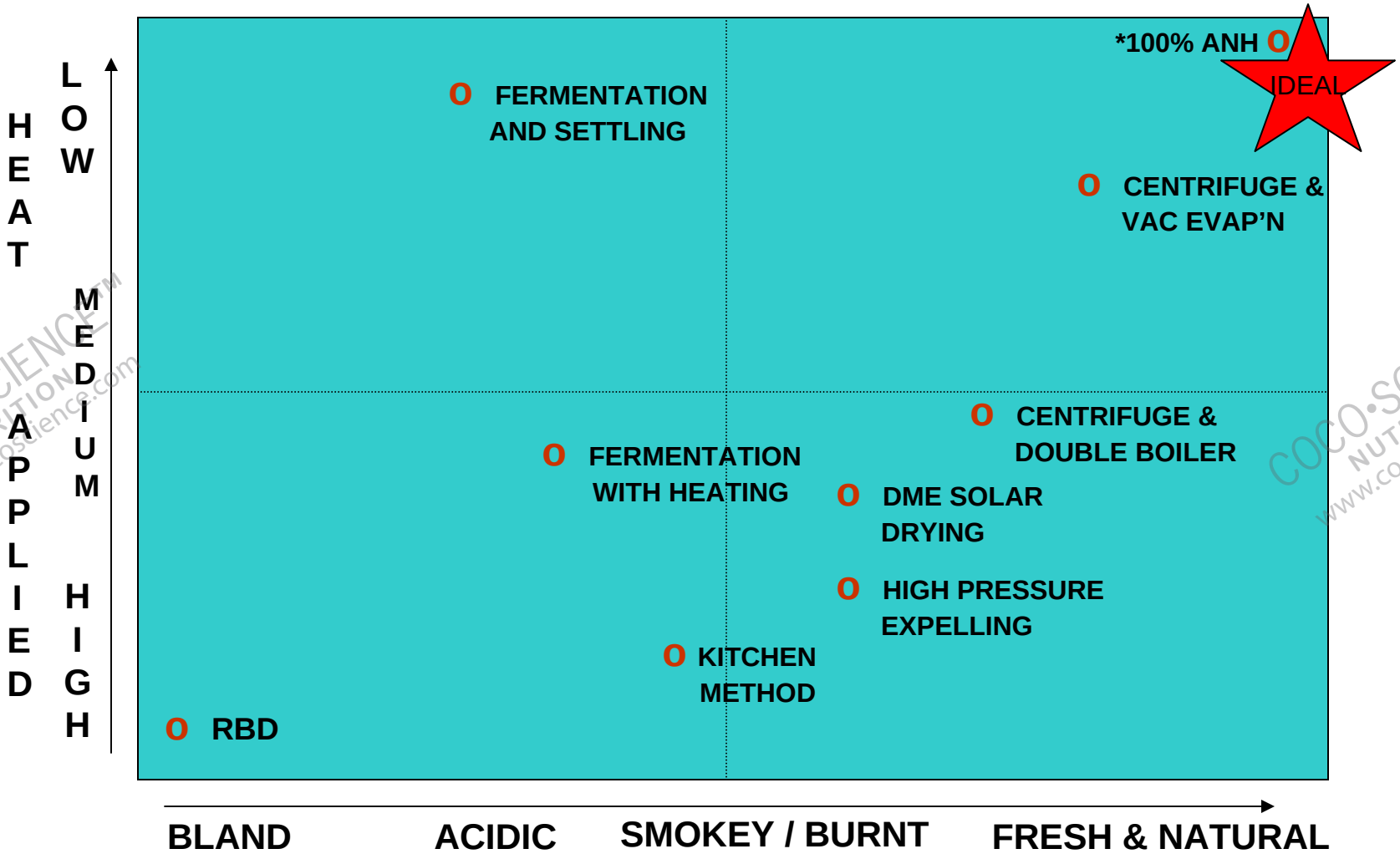
VCO Process Description

Separation Technique	**Moisture Removal Method**	**Common Process Name**
Cooking	Cooking, heating, evaporation	Traditional Kitchen Method
Fermentation / Enzymatic	Settling, decantation, evaporation (4 wks process) **Absolute No Heat**	Natural Fermentation **ANH** process
Fermentation / Enzymatic	Heating & evaporation	Fermented - Pasteurized
Fermentation / Bacteria	Settling, decanting, low heating & evaporation	Biotechnology (local Malaysian process)
Centrifuge (Batch system)	Heating, Pasteurization, Steam, Double Boiler, evaporation	Centrifuged – Pasteurized
Centrifuge (Batch system)	Vacuum Evaporation	Centrifuge – Vacuum Evaporated
Physical Separation under Dedicated Centrifugal force	Moisture removed during process **Proprietary Instantaneous Absolute No Heat Process**	Physical Cold Extraction **100% ANH** process (eg **CocoScience ANH-VCO**)
Direct Oil Expelling, Low Pressure, Quick Dry, Fresh Dry (Direct Micro Expeller)	Direct Heating to remove water in coconut meat/gratings	Low Pressure Direct Cold Expelling – manual hydraulic Press
Direct Oil Expelling, High Pressure (Expeller Press)	Direct Heating to remove water in dried coconut meat	Forced Expeller Screw Press

VCO Quality Quadrant

Basic Characteristics (Smell & Taste) for some VCOs



BASIC SENSORY CHARACTERISTICS: SMELL & TASTE

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Fine Quality Premium ANH-VCO for Raw Consumption