ALLAND & ROBERT

Since 1884

June 2026


GUM
ARABIC
AND ITS
SECRETS
ADVANCED
KNOWLEDGE TRAINING

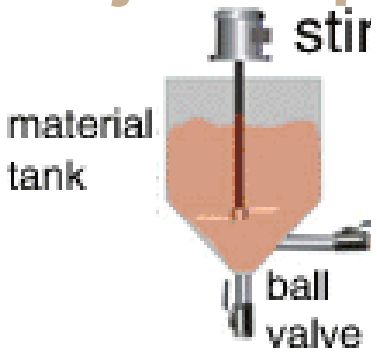
1. SOURCING update
2. BEYOND Acacia® range
3. SYNDEO® range
4. Acacia FIBRE
5. REGULATION

1. SOURCING update

Question 1

RATIO SENEGAL / SEYAL ➔ Action Violaine

Spray drying operation : no modification, just a perfect step keeping the integrity of the gum



CRUDE GUM
+ water

Possibly processing aids

SOLUBILISATION
PURIFICATION STEPS

SINGLE
DRYING
TECHNOLOGY

MULTIPLE EFFECT
DRYING
TECHNOLOGY

GRANULATION

FINE REGULAR
SPRAY DRIED
QUALITIES

FLUIDISED BED
DRYING

INSTANT SOLUBLE QUALITIES

STANDARD
GRANULOMETRY

MEDIUM
GRANULOMETRY

COARSE
GRANULOMETRY

GRANULATED
GUM

SENEGAL GUM

PROTEIN CONTENT

2%

LAEVOROTATORY OPTICAL ROTATION

-20 to -35°

DIFFERENCES IN FUNCTIONAL PROPERTIES

SEYAL GUM

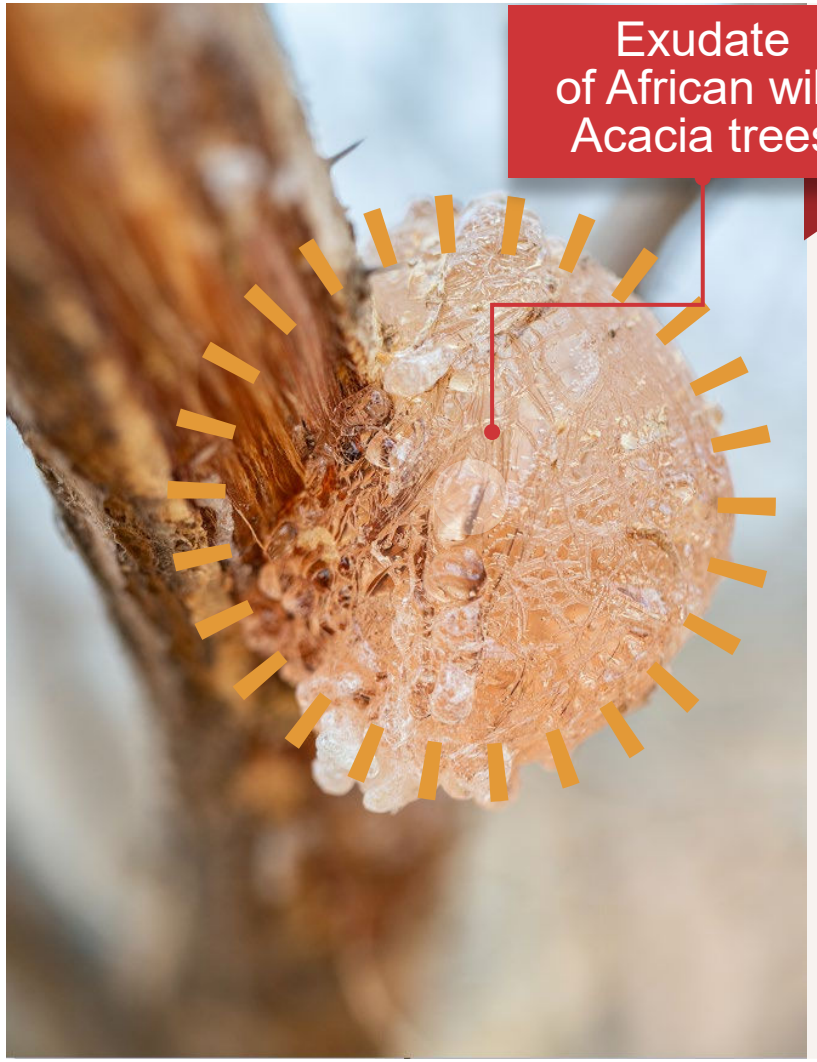
PROTEIN CONTENT

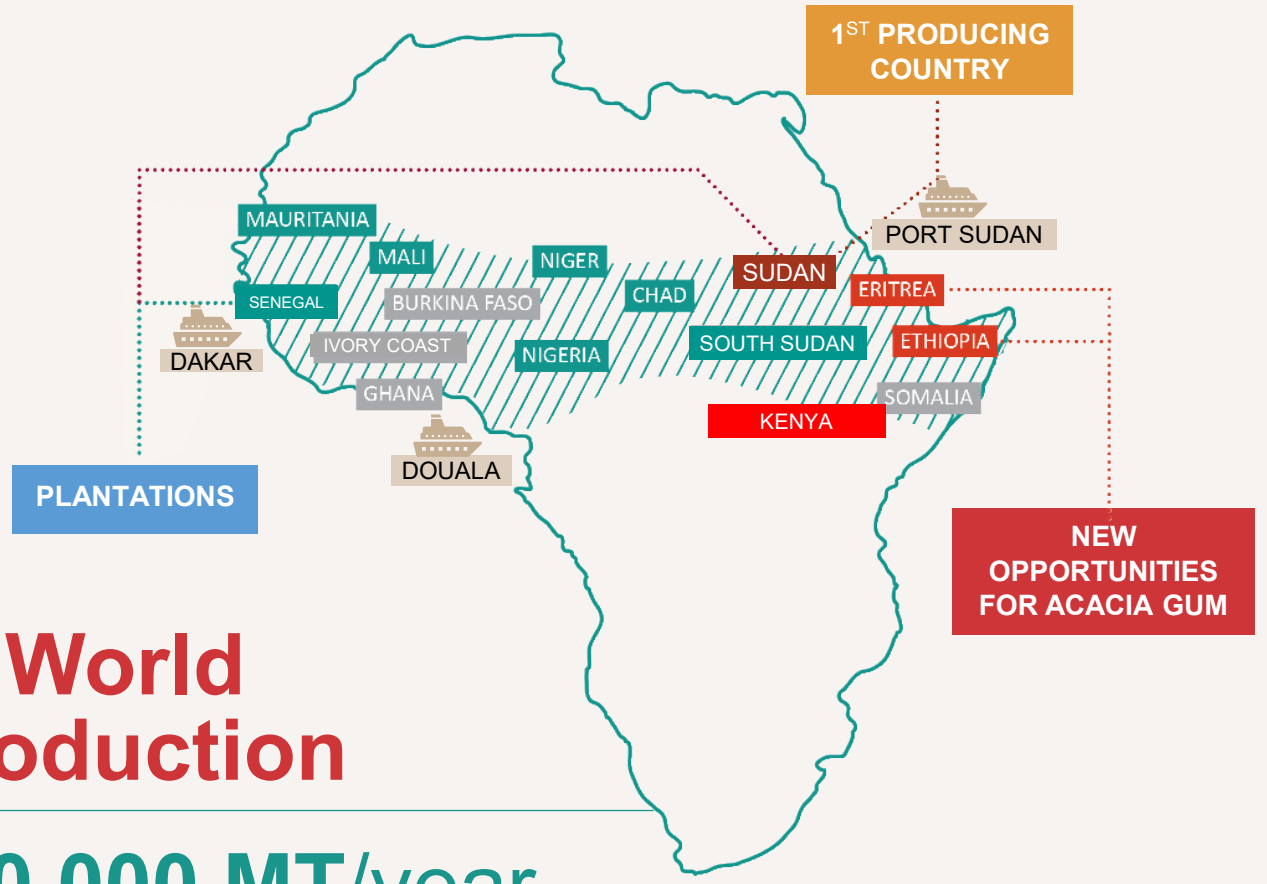
1%

DEXTROROTATORY OPTICAL ROTATION

+35 to +60°

MAIN PRODUCING COUNTRIES





World production

80 000 MT/year

An innovative process

for optimized acacia gum

LOW CARBON FOOTPRINT
BEYOND Acacia®
HIGH DENSITY GRANULES

HIGH DENSITY GRANULES

- **IMPROVED SOLUBILIZATION** even in cold manufacturing processes
- **EXCELLENT HYDRATION** Properties
- **HIGH DISPERSION** Ability
- **FOAMING REDUCTION** during process
- **LESS DUSTS** during pooring, excellent flowability & less lumps

Beyond Acacia®

The only range of acacia gum with **low carbon footprint** and **high dispersion ability.**

LOW CARBON

Environmental exemplarity with the lowest carbon footprint and a sustainable value chain.

HIGH DENSITY

Technological excellence with the highest density and dispersion ability.

By using Beyond Acacia®, you can positively affect the planet and the environment while using a highly technological and expert product.

2. BEYOND Acacia® range

Question 2

Beyond Acacia range is produced:

- ❑ **only at Saint Aubin plant**
- ❑ **on the 2 areas Port Mort and Saint Aubin**
- ❑ **with a regular spray drying tower**
- ❑ **by wet granulation**

3. SYNDEO® range

Question 3

SYNDEO range :

- ❑ **corresponds only to a gelatin replacer**
- ❑ **is a blend of multiple hydrocolloids**
- ❑ **always contains acacia gum**
- ❑ **always contains carrageenans**

4. Acacia FIBRE

Question 4

Acacia FIBRE:

- ❑ **is a food additive**
- ❑ **conformation/composition is different from acacia gum**
- ❑ **contains at least 95% of fibre**
- ❑ **Status is recognized all over the world**
- ❑ **is a FODMAP**

5. REGULATION

Question 5

	YES	NO
I know if ACACIA FIBRE is allowed or not in my country	❑	❑
Nutritional claims are allowed in my country when food is formulated with acacia fibre	❑	❑
Healthy claims are allowed in my country when food is formulated with acacia fibre	❑	❑
I am aware of new EU regulation 2026/196 that will enter into force in August 2026	❑	❑

Question 2

RATIO SENEGAL / SEYAL ➔ Action Violaine

SENEGAL GUM

PROTEIN CONTENT

2%

LAEVOROTATORY OPTICAL ROTATION

-20 to -35°

DIFFERENCES IN FUNCTIONAL PROPERTIES

SEYAL GUM

PROTEIN CONTENT

1%

DEXTROROTATORY OPTICAL ROTATION

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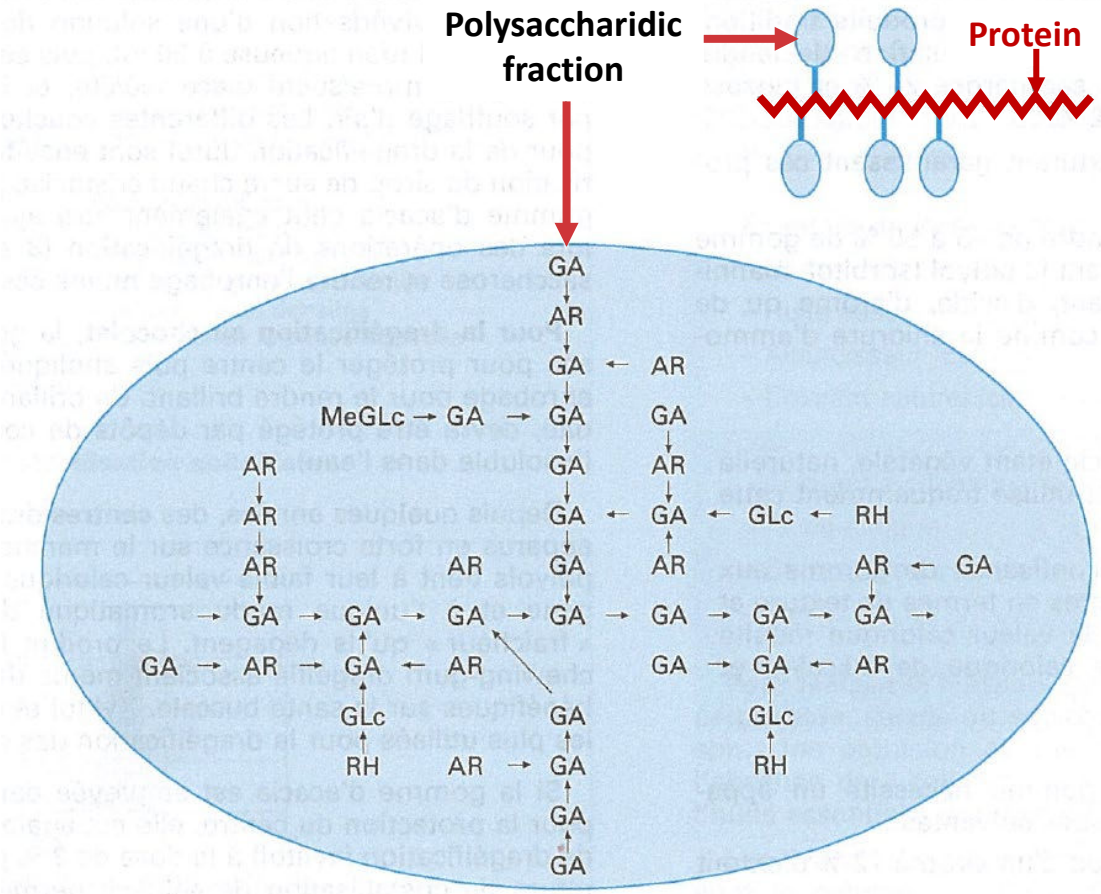
THE CHEMICAL STRUCTURE OF ACACIA GUM

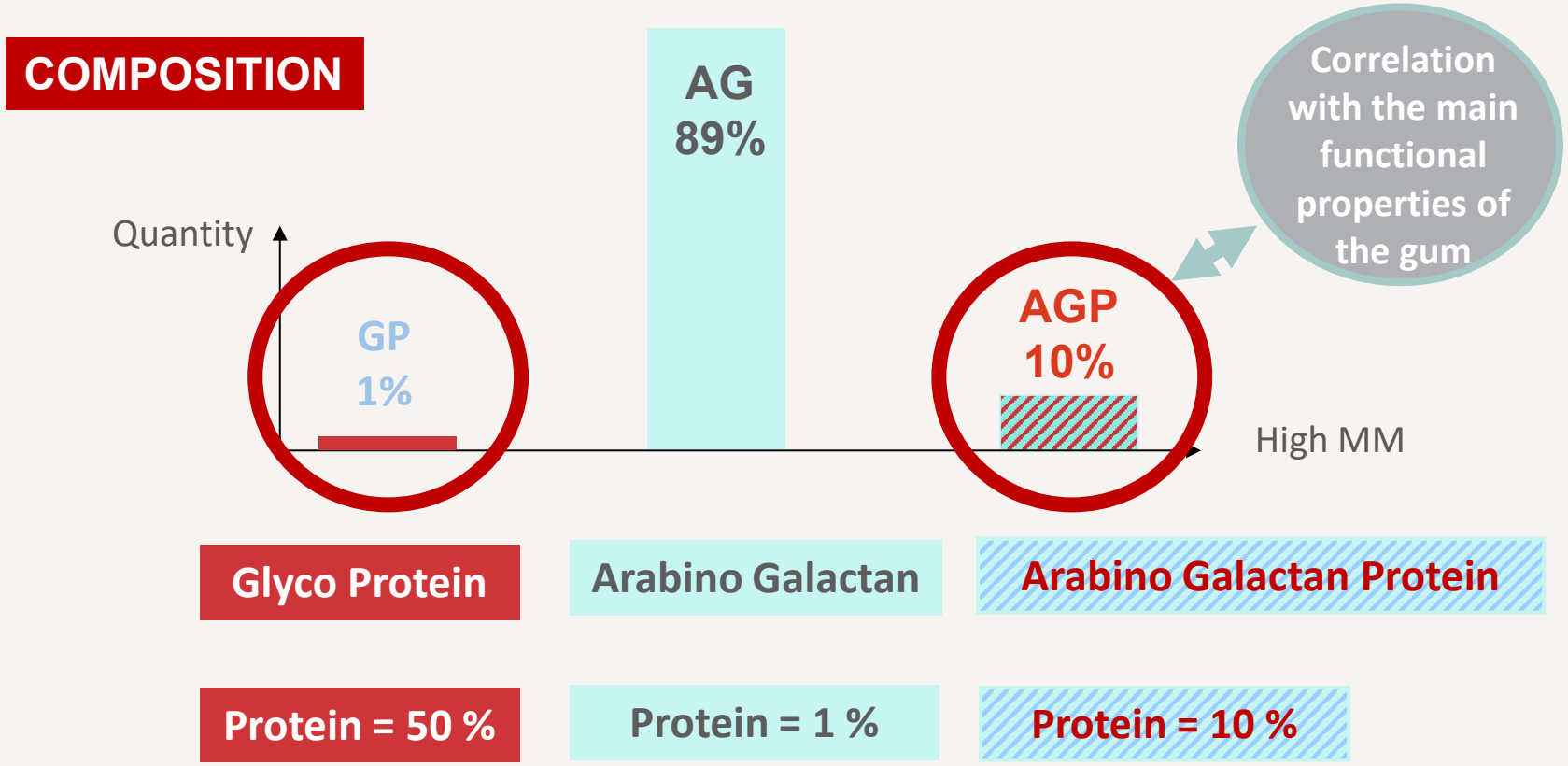


Protein chain = 1 to 2,5% of the polysaccharide

3 sugars:
- GALACTOSE
- ARABINOSE
- RHAMNOSE

EMULSIFYING PROPERTIES

ACACIA GUM CHEMICAL STRUCTURE:
correlated to the viscosity and the quality of the interfacial film



TENSIOACTIVE PROPERTIES

FOR THE FORMULATION OF **BIPHASE FOOD SYSTEMS**

Oil-in-water

→ **EMULSIFYING**

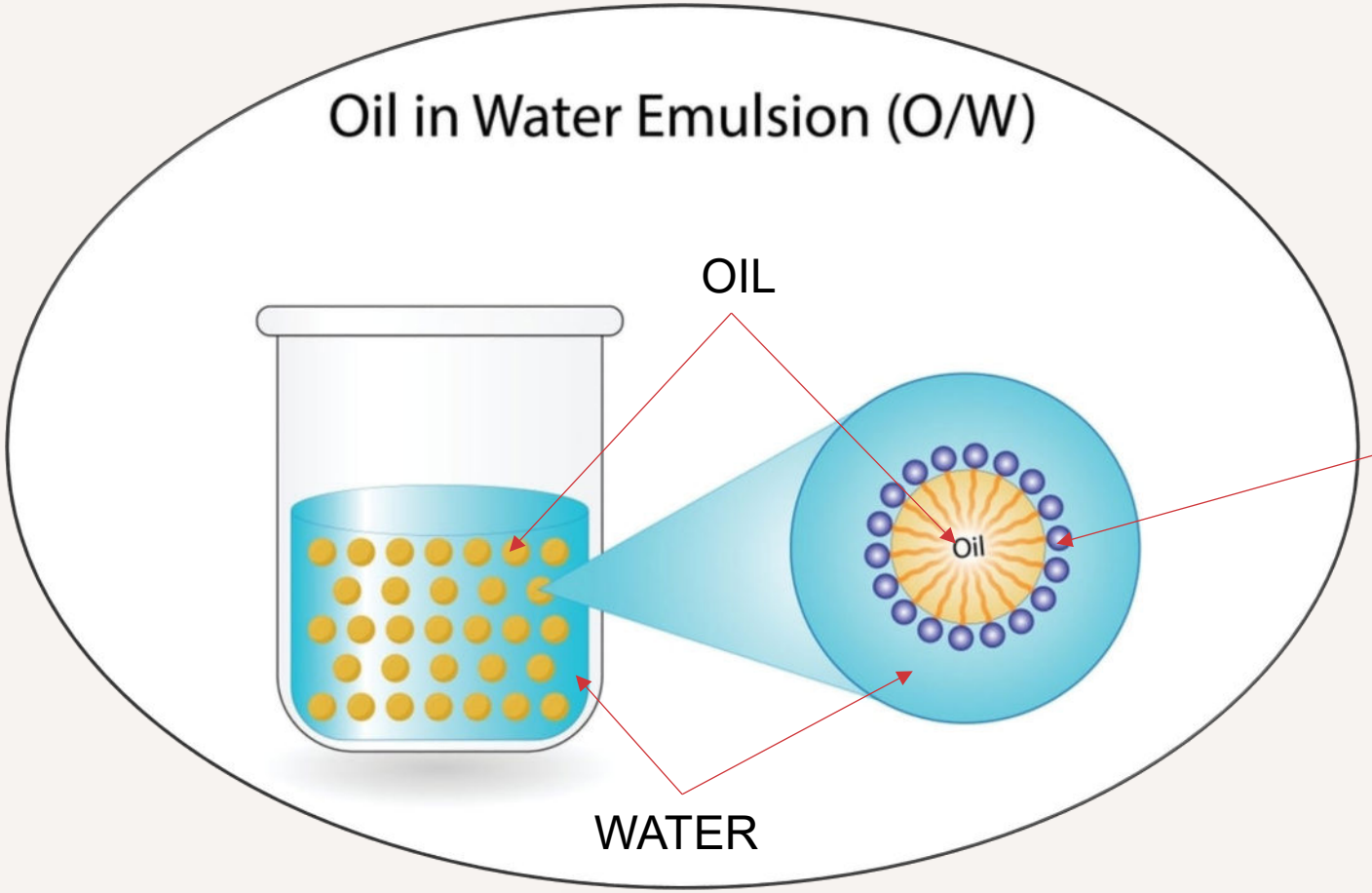
Air-in-water

→ **WHIPPING**

Solid-in-water

→ **SUSPENDING**

WHAT IS AN EMULSION?



EMULSIFIER

NATURAL ACACIA GUM

EMULSIFYING PROPERTIES

→ **Essential oils for the taste + colour** 

Essential oils (Citrus, orange, cola…) + colors

→ **Acacia gum** 

Emulsification of oils + stability

= EMULSION

→ **Carbonated water** 

→ **Sucrose or sweeteners**

Regular soda, sugar reduced  *or sugar free* 

- **Many factors impact the stability of both emulsions and final beverages**
  - → **Acacia gum quality and amount, nature of the oils, process etc…**

EMULSIFYING PROPERTIES

NATURAL ACACIA GUM

Waterloving hydrophilic head

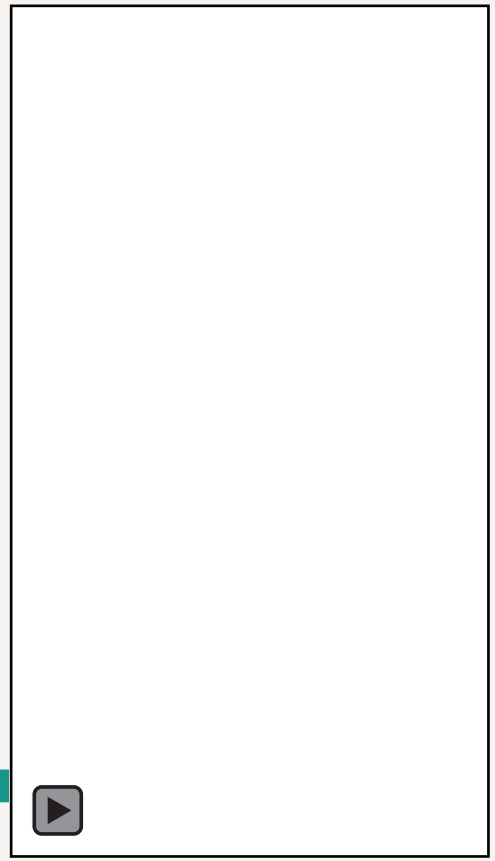
= sugar fraction

Oil loving hydrophobic tail

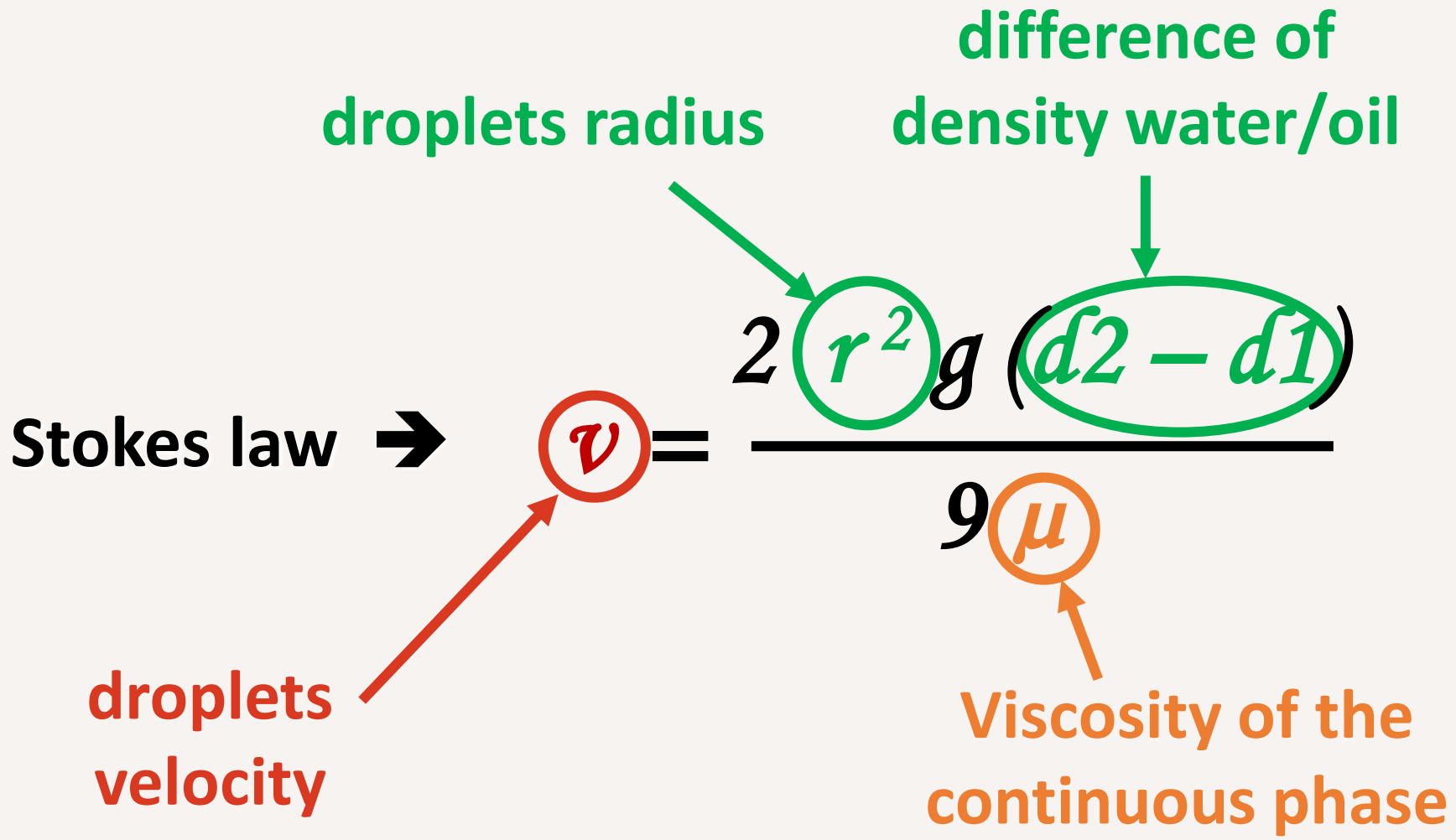
= protein fraction

EMULSIFYING PROPERTIES

- A blend of 2 phases that are not miscible: oil-in-water (o/w), water-in-oil (w/o), air-in-water (a/w), etc…
- When the non-miscible phases are mixed, energy is necessary to allow the repartition of a dispersed phase into a continuous phase (dressing or mayonnaise principles)
- To be stable, a lot of energy and an emulsifying agent are at least mandatory



EMULSIFYING PROPERTIES



EMULSIFYING PROPERTIES

Stokes law ➔ $$v = \frac{2\ r^2\ g\ (d2 - d1)}{9\ \mu}$$

EMULSIFYING PROPERTIES

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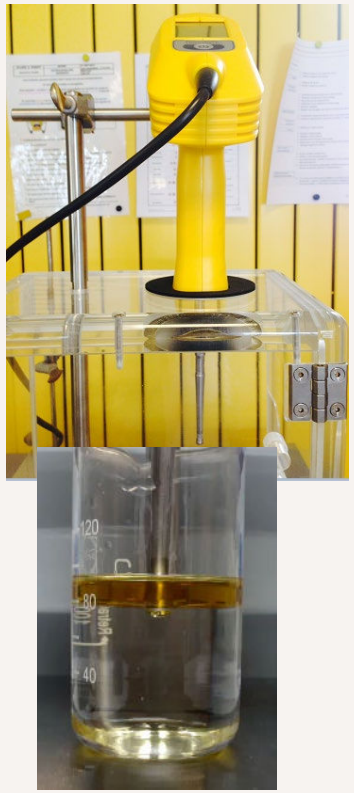

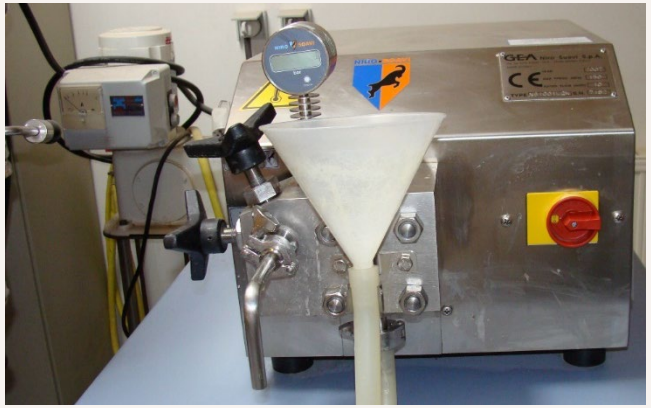

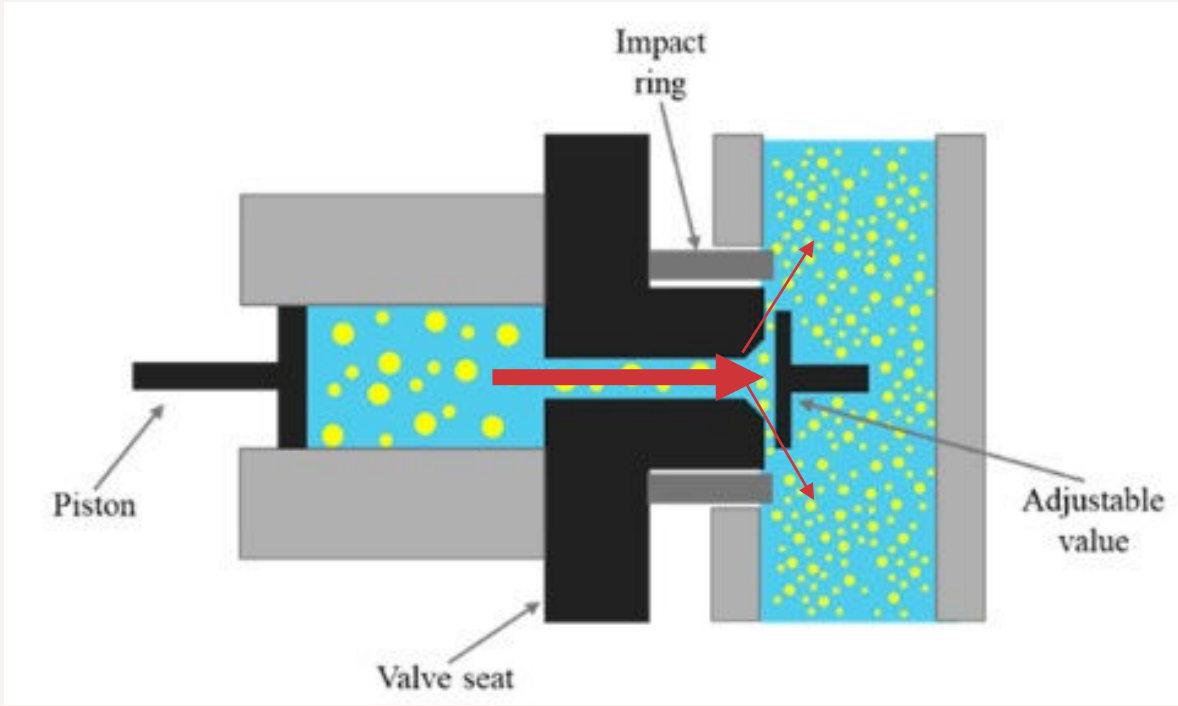

Picture from : Versatile Emulsion-Based Encapsulation System Production Processes: A Review

EMULSIFYING PROPERTIES

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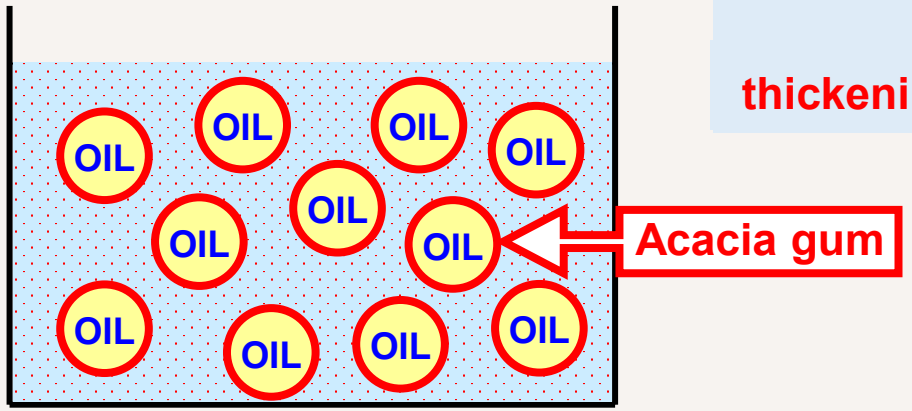


CONTINUOUS PHASE:

WATER

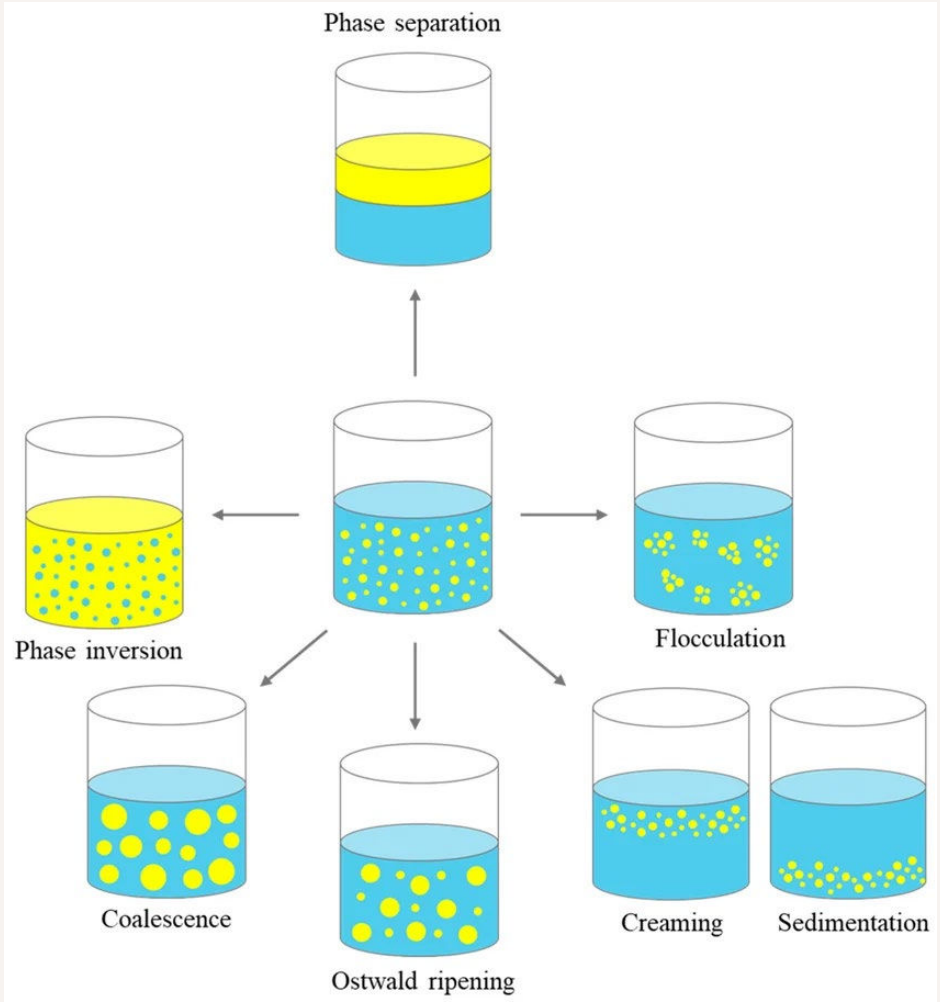
thickening agent = acacia gum

DISPERSED PHASE:

OIL

with flavours/colours

EMULSIFYING PROPERTIES



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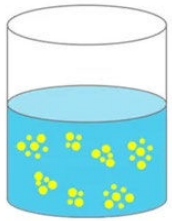
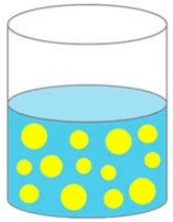
EMULSIFYING PROPERTIES

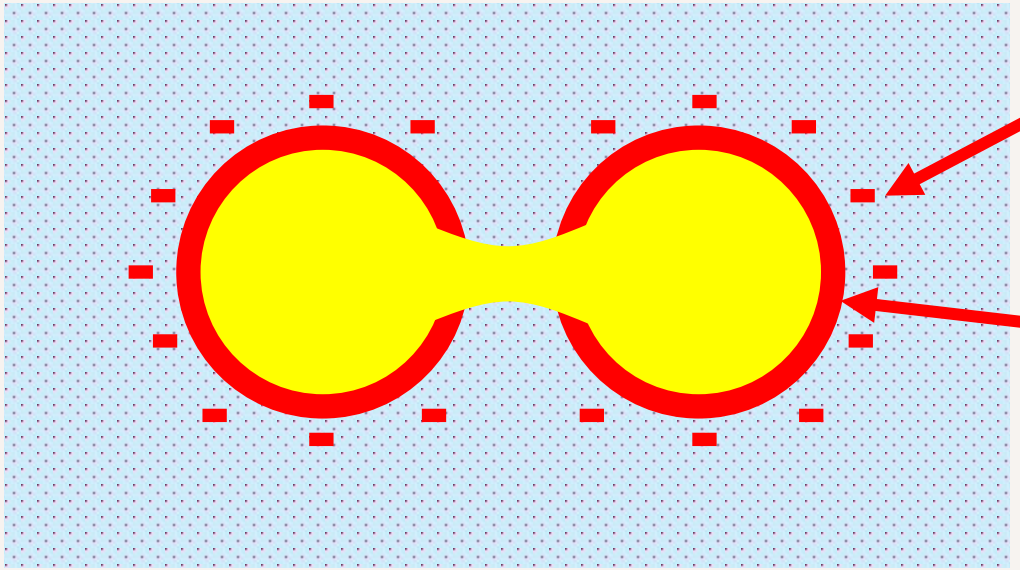

Flocculation


Coalescence

➔ **Acacia gum : quantity and quality**

Component	A. Senegal	A. Seyal
Galactose (%molar)	34.9	32.9
Arabinose (%molar)	31.7	53.1
Rhamnose (%molar)	14.3	2.7
Glucuronic acid (%molar)	16.3	6.1
4-O-Me-Glucuronic acid (%molar)	0.8	5.2

Negative charges

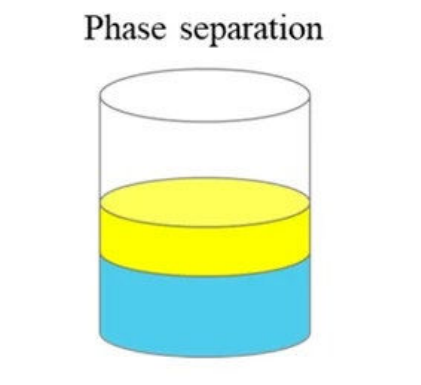


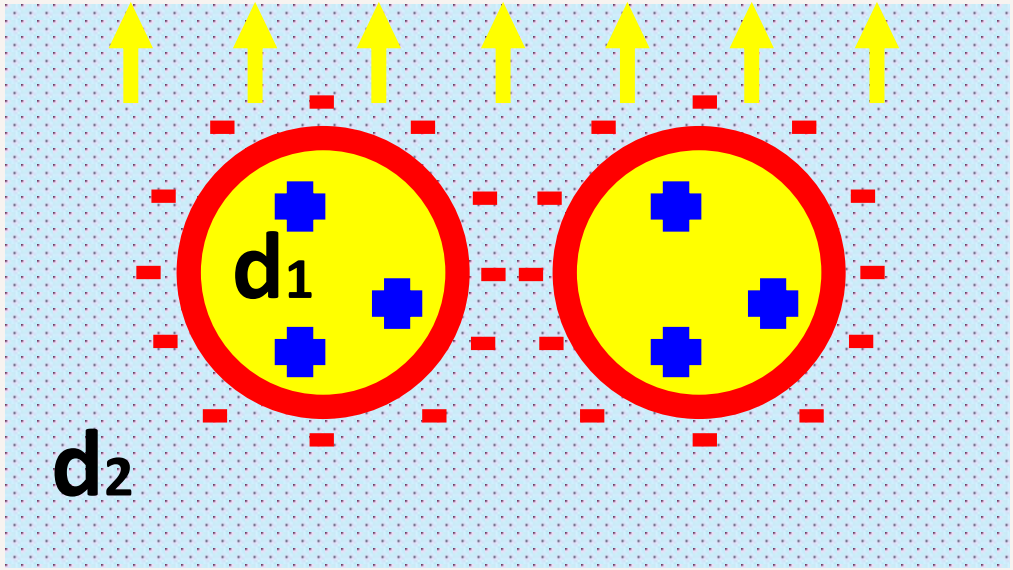
High quality film due to viscoelastic properties of acacia gum

EMULSIFYING PROPERTIES

Stokes law → $v = \frac{2\ r^2\ g\ (d2 - d1)}{9\ \mu}$

→ Physical law : separation when densities are different



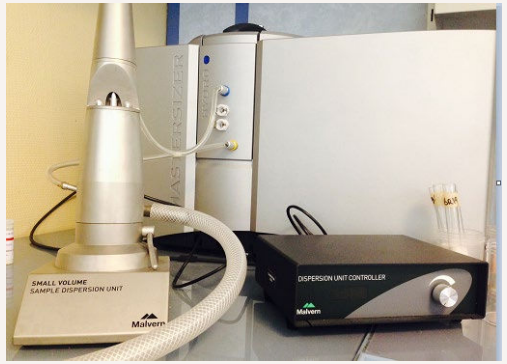


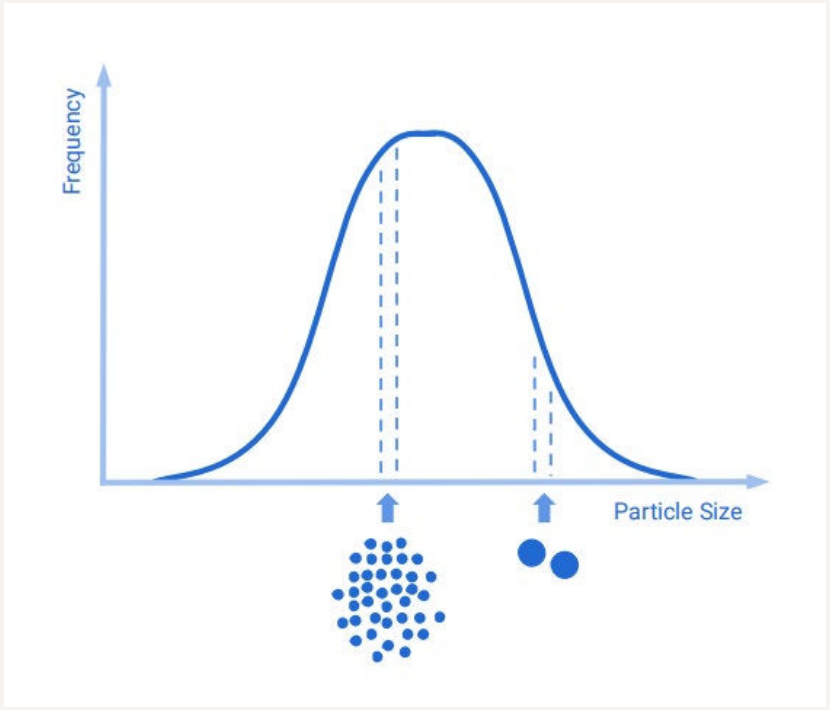
if $d_1 << d_2$

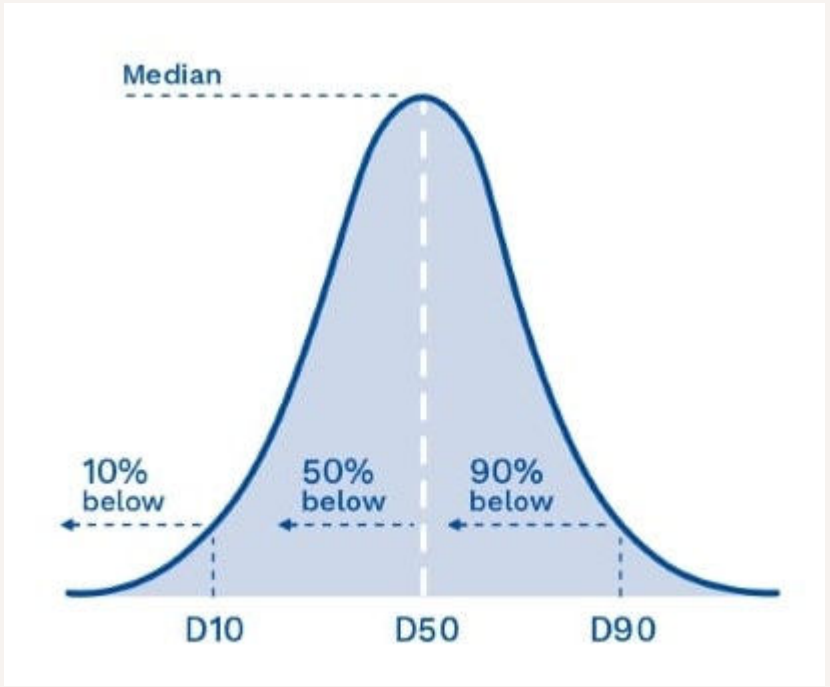
Weighting Agents
Estergum
S.A.I.B.
MCT

*[**Estergum** = glycerol ester of wood rosin, E445 / **S.A.I.B.** = Sucrose Acetate Iso Butyrate, E444].*
*[**B.V.O.** : Brominated vegetable Oils / **M.C.T.** = Medium Chain Triglycerides]*

EMULSIFYING PROPERTIES







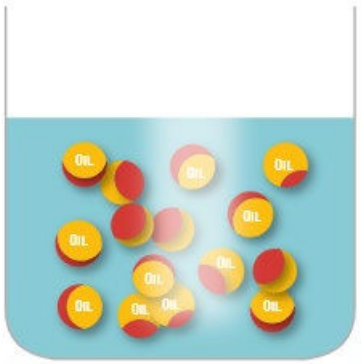
Emulsion stability is measured with a particle size analyzer - stress tests are applied to mimic processing conditions

FUNCTIONAL PROPERTIES

ENCAPSULATION PROPERTIES

1

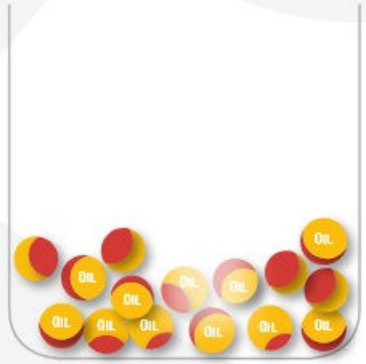
Successful emulsion of dispersed droplets



2. Spray drying operation

3

Flavor encapsulation in powder



- Film forming ability thanks to various characteristics including negative charges
- Flavor retention
- Protection against moistures and contaminations
- Stabilization of the droplets size (1µ)

- Film barrier against oxydation and volatiles losses
- Reduction of the surface tension between the continuous and dispersed phases of the emulsion.

ACADEMIC RESEARCH: 2 PHD completed in 2022

Stabilization of Aroma Emulsions by Acacia gum-water system
Characterization and Physicochemical Understanding of water/gum/aroma Interactions

Determination of the parameters that drives mechanisms of instability of o/w emulsions in beverages by a deep study of phenomenons occurring at the interface o/w

1. Hydrophobicity of oils (flavours and colours)
2. Solubility of oils in water
3. Viscosity of oil phase
4. Effect of pH

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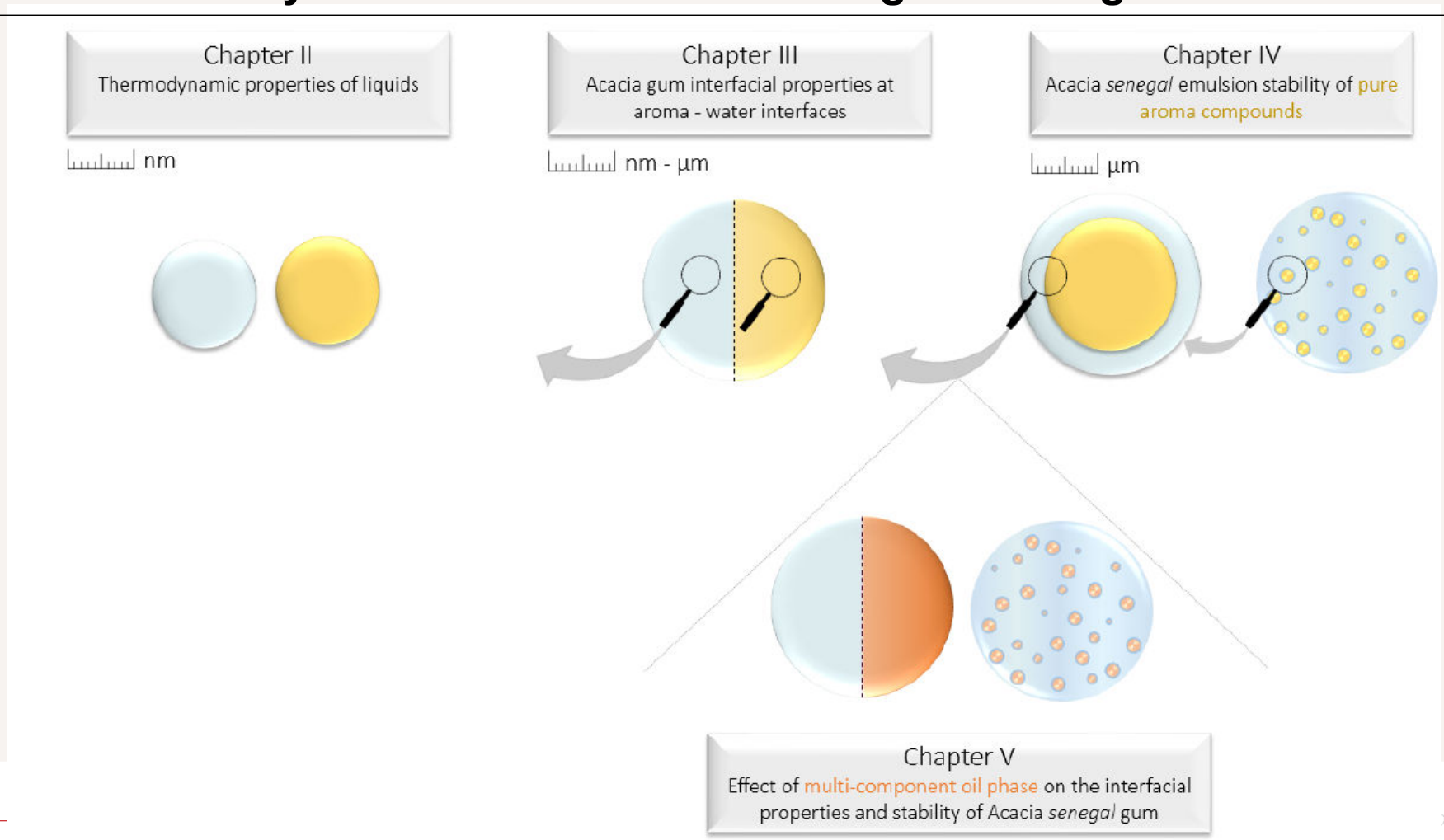

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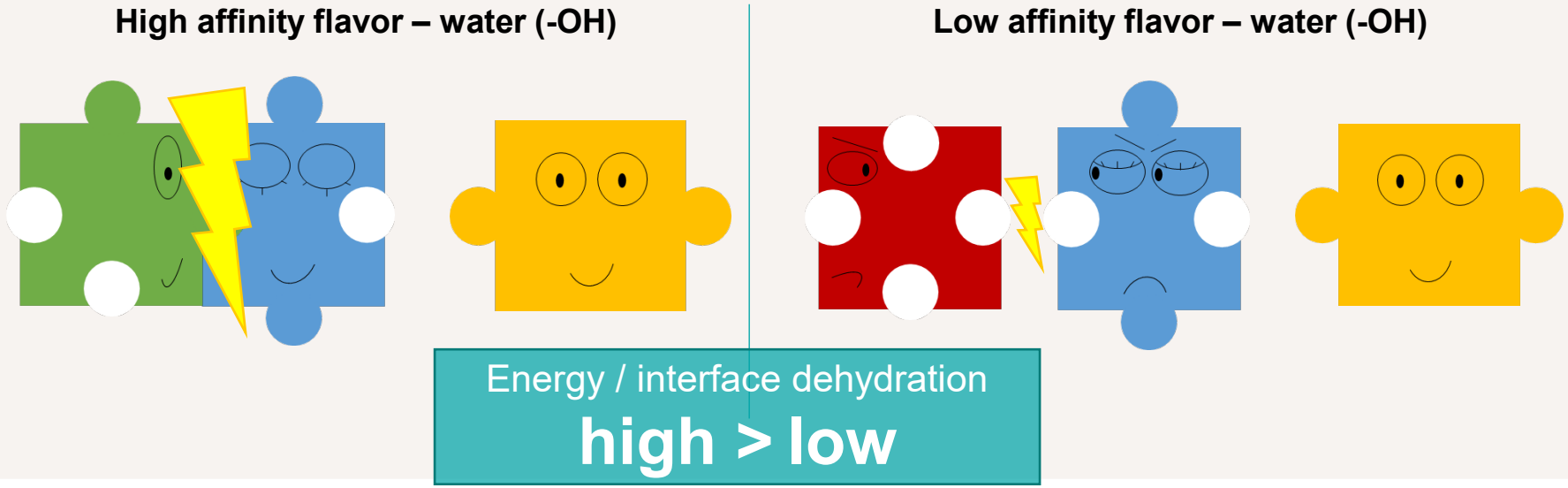
Results :

- **Acacia gum** adsorption to the interface **oil-water** depends on flavor-water interactions



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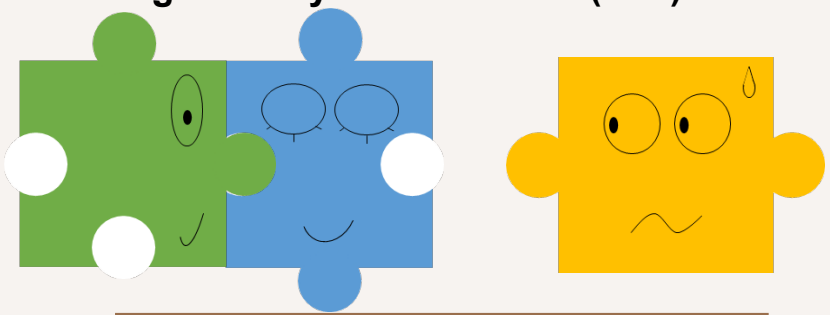
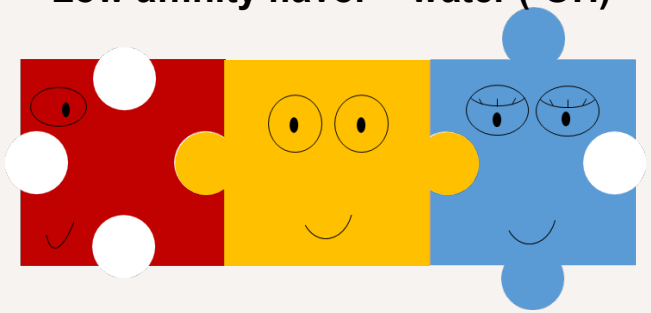
Hypothesis : Adsorption is driven by **proteinic fraction** of Acacia gum (easier to dehydrate)

High affinity flavor – water (-OH)



Layer of acacia gum / interface:
difficult – low elasticity

Low affinity flavor – water (-OH)



Layer of acacia gum / interface:
efficient – high elasticity

- hydrophilic flavor
- hydrophobic flavor
- water
- Acacia gum

Q & A

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