OVOCONCEPT
EGG PRODUCTS
A constantly evolving industry
COMPLETE LINES AND PROCESSES
CONTENTS

• Presentation
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The market in a few figures

Production of eggs worldwide: around 700 billion (2.5 billion laying hens)

- Principal producers:
- China: 140 Billion,
- Former USSR: 80 Billion
- USA: 75 Billion
- Japan: 40 Billion
- Brazil: 30 Billion
- India: 27 Billion
- Mexico: 21 Billion
- France: 16 Billion
- Germany: 15 Billion
The market in a few figures

• Globally, the share of egg products represents around 3 million tonnes (10% of eggs produced)
• In France, it is around 30%
• According to dietary habits, these are the biggest consumers of egg products: USA 35%, Italy and Switzerland 40%, Japan 45%
The market in a few figures

• The share of egg products is increasing regularly in relation to “shell eggs”
• France produces around 300,000 tonnes of egg products per year
  – 50% for industry in liquid, frozen or powdered form
  – 50% for catering and non-domestic catering in the form of all existing “prepared” products
Egg products in different forms

- Liquid eggs
- Eggs powder
- Hard boiled and poached eggs
- Prepared products
Egg products in different forms

- cracking: extraction of specific proteins from the egg white or yolk
  - lysozyme: most used for its antibacterial properties in food and pharmacology
  - avidin: used as tracer or fixer in biotechnology
  - ovotransferrin: antibacterial products and as ingredient
  - phospholipids: antioxidant, immunological and emulsifying properties (use in cosmetics, pharmacology, etc.)
Pasteurised liquid egg

• The production process
  – Breaking
  – Filtering
  – Cooling
  – Storage before pasteurisation
  – Homogenisation
  – Pasteurisation
  – Packaging
THE RAW PRODUCT
BREAKING
BREAKING
FILTERING
COOLING
STORAGE BEFORE PASTEURIZATION
HOMOGENIZATION
PASTEURIZATION
PACKAGING
DRYING
CLEANE IN PLACE (C.I.P)
Typical liquid egg production unit plan
Pasteurised liquid egg

“Product quality” controls
• Raw product controls
• In-process controls
• End product controls
Pasteurised liquid egg

• **Raw product controls**
  – Control upon receipt and identification of the batch
  – Date of laying
  – General appearance of the batch
  – Temperature
  – Haugh units
Pasteurised liquid egg

- **In-process controls**
  - Control of bacterial load before pasteurisation
  - Control of temperatures before pasteurisation
  - Control of pasteurisation and cooling temperatures
  - Control of sugar and salt concentrations if necessary
Pasteurised liquid egg

• **End product controls (mandatory)**
  Bacteriological controls
  Total flora count (< 100 000/g)
  Endobacteria count (< 100/g)
  Staphylococcus count (absence in 1g)
  Salmonella count (absence in 1g)

Physicochemical controls
Dry material to verify non-wetting of the product
Fatty materials and proteins to verify non-wetting of the product
Butyric acid count 3OH (<10 mg/kg dry product) to verify absence of incubated eggs in the product
Lactic acid count (<1000 mg/kg dry product) to verify good conditions of hygiene in production
Succinic acid count (<25 mg/kg dry product) to verify good conditions of hygiene in production
Pasteurised liquid egg

- End product controls (optional)
  - PH
  - Density
  - Colouration
  - Functional properties of the products (principally foaming properties)
Pasteurised liquid egg

• Uses of pasteurised liquid eggs or egg powder
  – Biscuits and cakes
  – Charcuterie
  – Creams and desserts
  – Sauces
  – Ice cream
  – Pasta
  – Sweets
  – Animal feed
  – Cosmetics
  – Pharmacy
Pasteurised liquid egg

• Different functional properties
  - Coagulating strength (proteins of the white and yolk)
  - Used in bakery (flans, tarts…), charcuterie (dumplings, sausages, surimi…), production of creams (custard, crème anglaise,…) and ice cream, etc…
  - Foaming strength (proteins of the white)
    - Used in biscuits and cakes (sponge fingers, meringues …), sweets, ready meals (fish or vegetable mousses)
  - Emulsifying strength (phospholipids and lipoproteins of the yolk)
    - Used in biscuits and cakes (gingerbread, hard
Pasteurised liquid egg

- Different functional properties
  - Gelling strength (proteins of the white)
  - Used mainly in biscuits and cakes, ready meals and sweets
  - Binding strength (proteins of the white and yolk)
  - Mainly used in charcuterie to limit losses upon cooking
  - Anti-crystallising strength (white)
  - Used in sweets to avoid unpleasant textures of the product
  - Colouring strength (pigments of the yolk)
  - Used in biscuits and cakes, pastries, sauces, etc…