THE ROLE OF FATS IN FOOD

GEOFF TALBOT

THE FAT CONSULTANT

THE BIG FAT DEBATE
Institute of Food Science and technology
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MELTING AND CRYSTALLISATION

- Chocolate
  - Hard at ambient temperature
  - Molten at mouth temperature
  - Polymorphic fats – need to be ‘tempered’
- Confectionery fillings
  - Steep melting – cool melting
- Margarines and Spreads
  - Fast crystallisation to allow solidification after depositing
- Ice cream
  - >50% solid fat at 0°C
  - Molten at mouth temperature
  - Ageing/hardening process dependent on crystallisation of fat phase

TEXTURE

- Shortness in biscuits and pastry
  - The more fat present the ‘shorter’ the texture
  - Fat coats flour and inhibits gluten formation
- Emulsions
  - Fats give creamy texture to mayonnaise, ice cream etc
  - Oil-in-water emulsions
    - Butter
    - Margarines and spreads
  - Water-in-oil emulsions
    - Milk, cream
    - Mayonnaise
    - Salad dressings

AERATION

- Whipped creams (dairy and non-dairy)
  - Fat crystallises around the air bubbles
- Cake batters
  - Fat crystallises around the air bubbles protecting them during early stages of baking
- Bread doughs
  - High melting fats hold the risen structure in place during early stages of baking

HEAT TRANSFER AND LUBRICATION

- Frying
  - Frying oils act as a heat transfer medium to the foods being fried
  - Controllable in terms of temperature to get different fried effects, colour, texture etc
- Lubrication
  - Machine oils and bread dough dividers
    - Vegetable alternative to mineral oils
  - Mouth lubrication
    - High fat foods have a creaminess and lubrication when consumed that makes them easier to digest

APPEARANCE AND FLAVOUR

- Chocolate and confectionery coatings
  - Imparts gloss
  - Can also affect or inhibit bloom formation
- Fat-soluble flavours
  - Mint, orange oil, lemon oil
- Infused oils
  - Garlic infused olive oil
  - Chilli infused olive oil
- Flavours produced during frying, baking
- Off-flavours due to oxidation, hydrolysis