

The complexity of speciality oils and fats

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What's the
difference
between
good and bad
CHOCOLATE?

A crash course in lipid chemistry

Triglycerides and fatty acids

Food scientists



“Fat is a blend of different triglycerides”

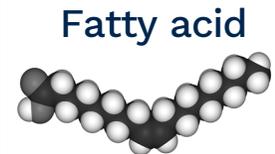
Nutritional scientists



“Triglycerides are built up of different fatty acids”

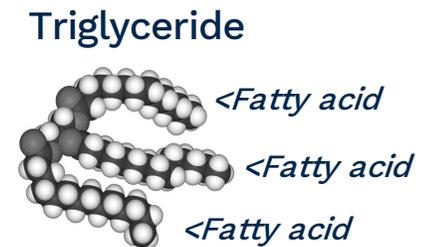
The **FATTY ACID COMPOSITION** determines the chemical attributes of the fat

- The way it smells and tastes, especially when heated or stored
- Nutritional value



The **TRIGLYCERIDE COMPOSITION** forms the physical attributes of the fat

- How it looks, melts, crystallizes, and how stable it is > impacts the food structure and quality
- In nature, there is always a blend of different triglycerides > melting range



A crash course in lipid chemistry

Triglycerides are made up of a range of fatty acids with different characteristics

	Nutritional value	Stability	Structure	Source
Saturated	● ●	● ● ● ● ●	● ● ● ● ●	● ● ● ● + animal fat
Monounsaturated	● ● ●	● ● ●	● ●	● ● ●
Polyunsaturated	● ● ● ●	●	●	● ● + fish oil
Essential	● ● ● ● ●	●	●	● ● ● + nuts and kernels
<i>Trans</i>	●	● ● ●	● ● ● ●	<i>Various animal fats, butter</i>

● Sunflower oil
 ● Coconut oil
 ● Shea fat
 ● Olive oil
 ● Rapeseed oil
 ● Soybean oil
 ● Palm oil
 ● Palm kernel oil

The complexity of what we do

We *combine* our **expertise**
in **fat chemistry** with an
understanding of our
customers' **manufacturing**
requirements and
demands to **TAILOR**
THEIR PRODUCT
OR SOLUTION

Let me give you some examples...

AAK

The Co-Development Company

Capital Market Day 2021





Speciality fat in chocolate

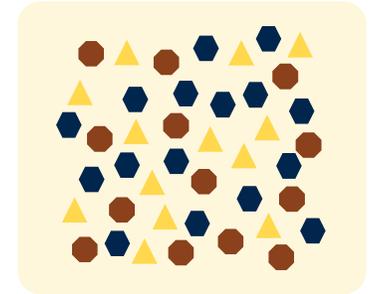
The fat in chocolate is the “the continuous part”

Most important for end consumers

- Look, color and gloss
- Hardness and snap
- Meltdown and flavor release

Most important for AAK’s customers

- Solutions that meet the needs of their end consumers
- Correct fat crystallization to make chocolate with long stability, and to avoid bloom
- A speciality fat system that integrates properly with cocoa butter and milk powder



Bloom

Changes in the fat crystals

How AAK makes a difference

Chocolate is mainly a triglyceride challenge

Tailored blend

- Access to a large number of different raw materials

Superior sensory quality

- Physical fractionation by thermodynamic properties
- Through different chemical or biochemical processes, we can:
 - control the fatty acids of the triglycerides, as well as their positions, through different esterification processes
 - control the fatty acids of the triglycerides through distillation



What
about
**INFANT
FORMULA?**

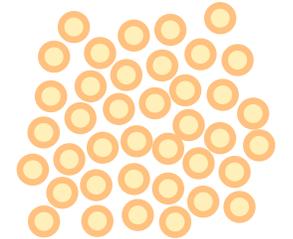


Speciality fat in infant nutrition

The fat in infant nutrition are droplets of oil captured in a protein shell

Most important for end consumers

- Exceptional nutritional value, including DHA (Omega-3 fatty acids), in the right concentration
- High energy content, thus high fat content (50 percent)
- Ability to resemble mother's milk, including local variations



Most important for AAK's customers

- Solutions that meet the needs of their end consumers
- Free from man-made and natural contaminants
- Adherence to strict regional and local regulations
- Ability to manage the oxidative stability of the highly unsaturated fat



How AAK makes a difference

**Infant nutrition is mainly a fatty acids challenge
...in addition to food safety and accessibility**

Tailored blend

- Access to a large number of different raw materials

Quality

- Quality control of raw materials from the source

Similarity to mother's milk

- Ability to control triglyceride structure ensures absorbability, resembling mother's milk

Matching the desired nutritional profile

- Blending facilities to ensure nutritional profile – every time

Food safety

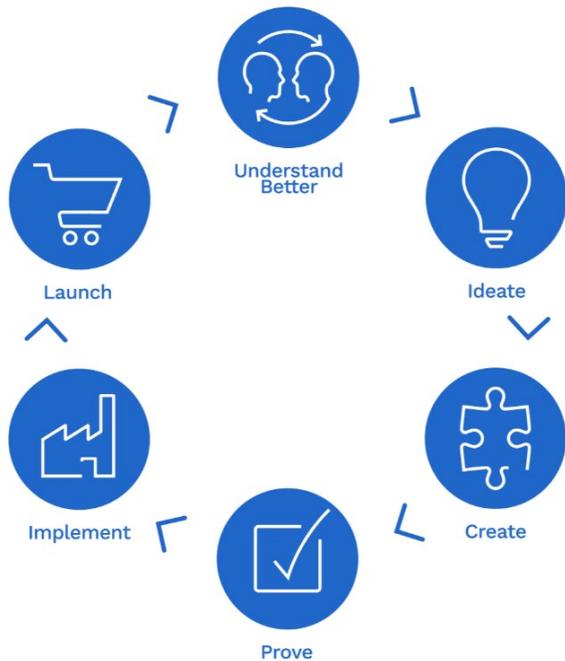
- Purification to the highest level with lowest possible impact on nutritional properties and stability



Finally, we bring our expertise and add customer innovation...

Besides the primary functionality, consumer products are adapted to specific markets, utilizing the expertise in our 15 Customer Innovation Centers around the world

Co-Development approach



Regional preferences



Shelf life and storage conditions



Rules and regulations

...in the industries where we choose to specialize

Chocolate & Confectionery Fats



Plant-based Foods



Special Nutrition



Bakery



Dairy



Personal Care



Foodservice



Technical Products & Feed



Thank you