

GENERAL RULES

Frying oils and fats

Oils and fats consist out of fatty acids. There are different kinds of fatty acids: saturated and unsaturated. Both have an influence on the cholesterol level in the blood. A high cholesterol level is not healthy because it increases the risk for cardiovascular diseases.

Saturated fatty acids

Saturated fatty acids raise the cholesterol level in the blood. This leads to a higher risks for cardiovascular diseases.

Unsaturated fatty acids

There are different kinds of unsaturated fatty acids: Mono Unsaturated Fatty Acids (MUFA) and Poly Unsaturated Fatty Acids (PUFA). Both lower the cholesterol level. The higher the level of unsaturated fatty acids in a frying oil or fat, the softer or more liquid this oil or fat is, due to a lower melting point.

Essential fatty acids are poly unsaturated fatty acids which cannot be made by the human body. This means they have to be present in our food.

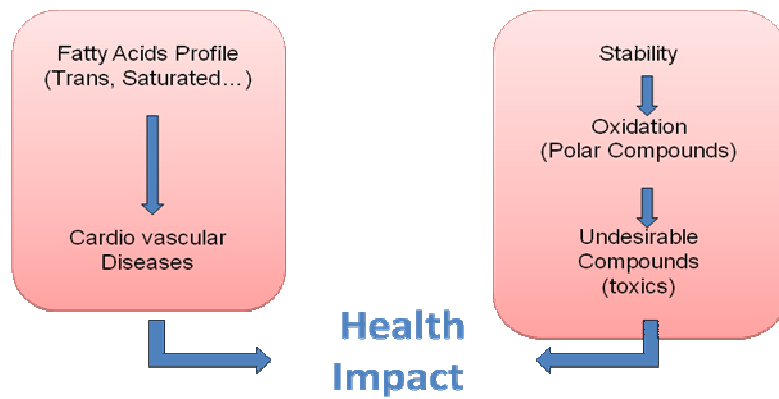
Trans fatty acids

A special category of unsaturated fatty acids are the Trans Fatty Acids (TFA). These are actually unsaturated fatty acids, which 'behave' in your body as saturated fatty acids due to their chemical structure. Trans fatty acids can be formed when hardening (hydrolyzing) oils. Trans fatty acids, who behave as saturated fatty acids in the human body, give a 7x higher risk for cardiovascular diseases and therefore perceived as the most unhealthy fatty acids . Healthy frying oil should contain max. 2% TFA (on oil base) and typically contain 1% TFA.

The more unsaturated fatty acids a frying oil or fat contains (and the less saturated and trans fatty acids), the more liquid it will be due to a lower melting point.

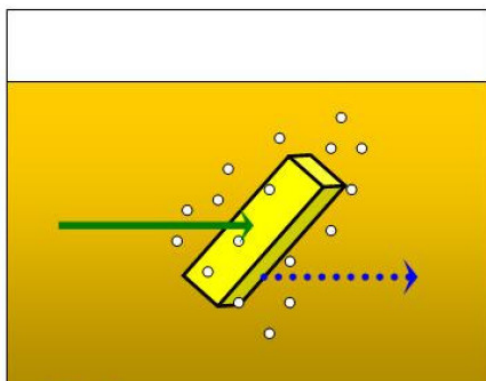
How to choose a good frying oil (or fat)?

This is a compromise between nutritional properties and stability of the oil



The oil in pre-fried foods exchanges during the final (re-) frying step for approximately 80 % against the deep-frying oil selected by the the end user/ restaurant. In addition there is a substantial portion of the deep-frying oil absorbed by the food. Therefore the selection of deep-frying oils should be based on the optimization of the process with regards to nutritional-physiological and culinary aspects.

The frying process



- ...> Steam from potato stick surface
- Oil absorption

When food is placed in hot oil, the surface temperature rises rapidly and water is vaporised as steam. The surface then begins to dry out: the plane of evaporation moves inside the food, and a crust is formed. The surface temperature of the food then rises to that of the hot oil, and the internal temperature rises more slowly towards 100°C.

The surface crust has a porous structure, consisting of different-sized capillaries. During frying, both water and steam are removed from the larger capillaries first, and replaced by hot oil. Moisture moves from the surface of the food through a boundary film of oil, the thickness of which controls the rate of heat and mass transfer.