



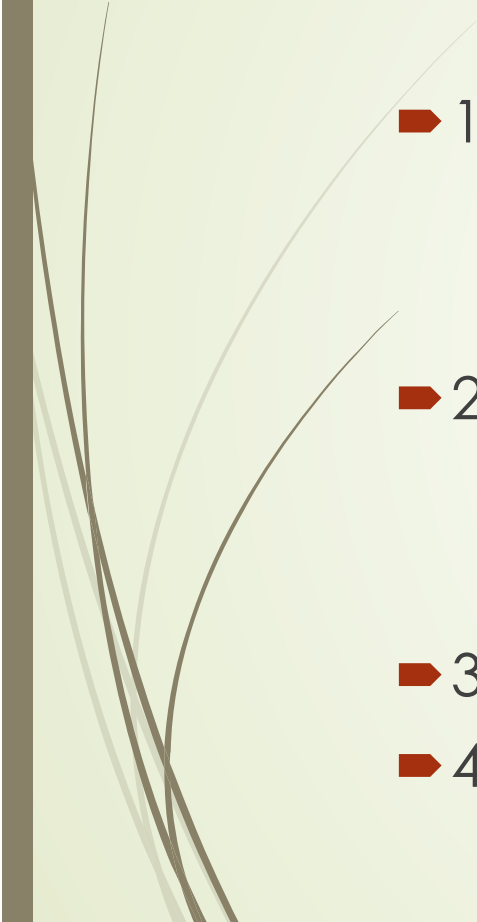
Fermentation & Drying of food

Created for Erasmus+ student project „conservation of food“ between Lithuania, Slovakia, France (Guadeloupe) and Germany by Romain-Rolland-Gymnasium, 10d.

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Structure:

- 1. Fermentation of food
 - 1.1 Definition
 - 1.2 fields of application
 - 2. Drying of food
 - 2.1 Definition
 - 2.2 technical drying methods
 - 3. history of conservation of food
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definition of fermentation

- ▶ enzymatic and microbial transformation of organic material into acid, gas or alcohol
- ▶ fermentation is deliberately applied in Biotechnology
- ▶ Fermentation is triggered by adding bacteria- mold- or other biological cell cultures or by adding enzymes (ferments) which then run the fermentation



<https://www.google.de/url?sq=&rl=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwj11vPttzgAhWKjaQKHQvXAeUQjR68AgBEAU&url=https%3A%2F%2Fwww.eat-this.org%2Fgemuese-fermentieren%2F&sig=AOvVaw39MNY14W6J8nac9xs8CjH&ust=1551374524212211>

fields of application:

- ▶ In food production and conservation (production of like Sauerkraut, Kimchi, Tsukemono, Miso or Nattō)
- ▶ Some food is directly produced by lactic acid fermentation, including mostly sour-milk-products like: yogurt, kefir or buttermilk
- ▶ Additional fields of application:
 - fermentation of tea leaves
 - fermentation of raw tobacco



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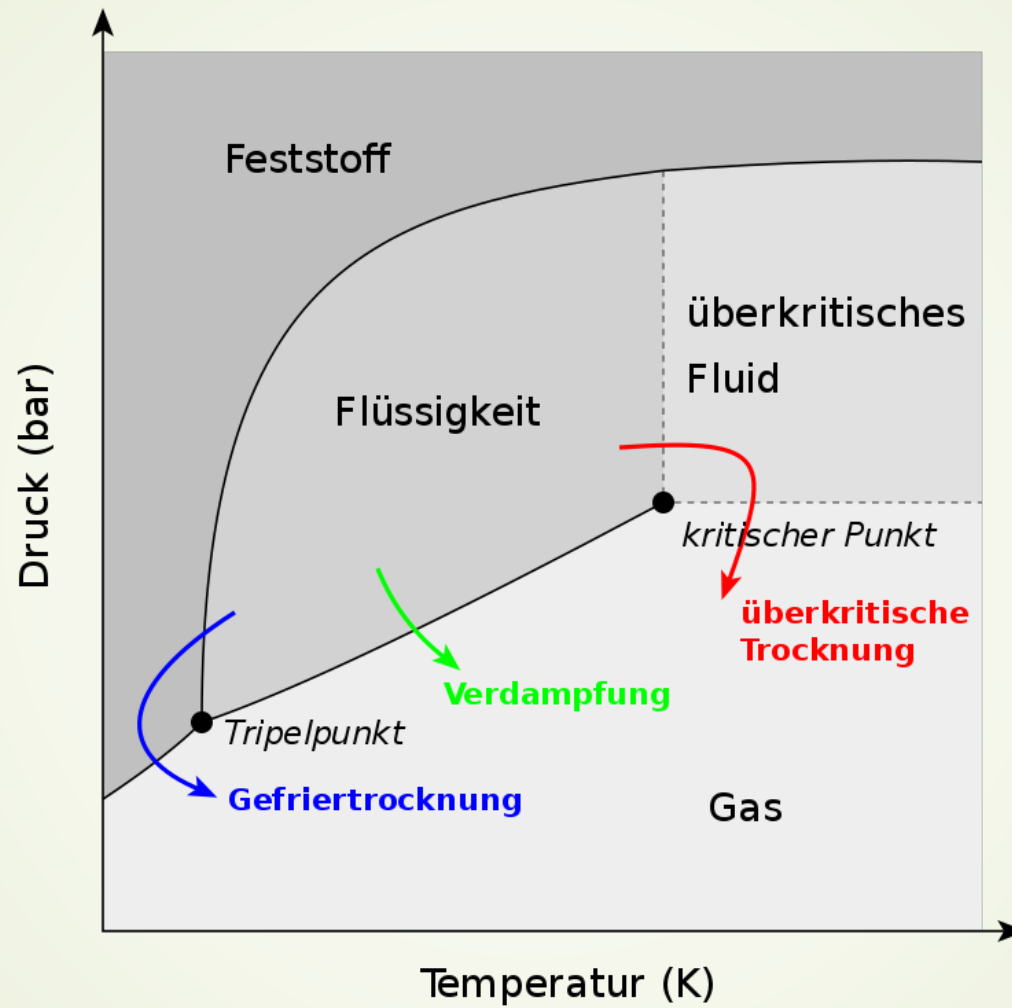


<https://de.wikipedia.org/wiki/Datei:Joghurt.jpg>



Definition of dehydration of food:

- A dehydration or desiccation is generally defined as the draining of liquid out of a material, the so called *dry material*, accomplished by evaporation, vaporization, the use of *desiccants* or other technical or chemical applications
- A characteristic of dehydration/desiccation is therefore the decrease of liquid by (usually) a thermal-physical transformation of that liquid



Drying method:

Technical drying methods:

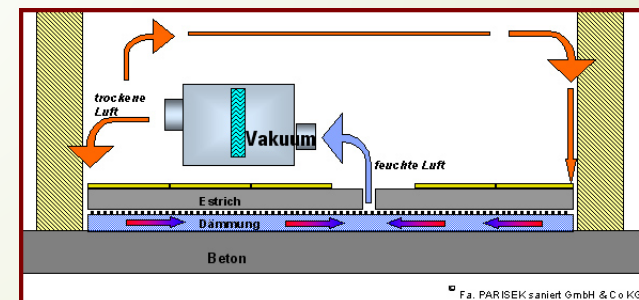
- Overcritical drying
- Vacuum drying
- Adsorption
- Granules desiccation
- Freeze draying

Air drying:

- parch
- maturation



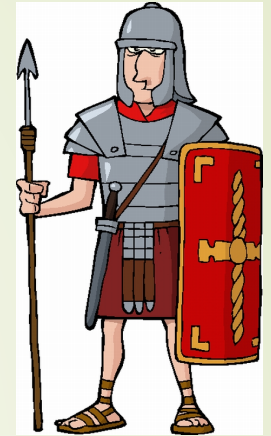
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history:

- Certain conservation methods have already been known for milleniums
- Already early on, many cultures tried to make themselves independent from the daily search of food by eating conserved food. Already the romans knew some of the conservation methods which are still being applied today
- They smoked meat, pickled vegetables, conserved fruits in honey or cooked food in salty water



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sources:

- ▶ <https://www.simplyscience.ch/teens-liesnach-archiv/articles/geschichte-der-konservierung.html>
- ▶ https://de.wikipedia.org/wiki/Fermentation#Technische_Fermentation
- ▶ <https://de.wikipedia.org/wiki/Trocknung#Dörren>
- ▶ <https://www.wissen.de/fermentieren-das-steckt-hinter-der-uraltten-kulturtechnik>