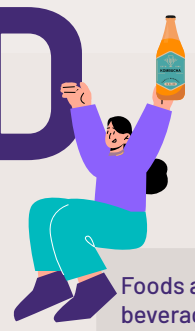
FERMENTED FOODS

DOMINO



Foods and beverages made through desired microbial growth and enzymatic conversions of food components.

> *This means that a food substrate, coming from plants or animals, undergoes controlled microbial growth and fermentation.*

What is fermentation?

Fermentation is a metabolic process in which microorganisms **break down complex nutrients present in food into simpler** components. This brings a **desirable change** in the **taste, texture, digestibility and preservability of the food.**

Food fermentation works in two main ways

1 The microorganisms needed for fermentation are already present in the raw food or in the environment where food is processed (e.g.: **sauerkraut and kimchi**).

2 Specific microorganisms are added to the food to start the fermentation process (e.g.: **kefir and kombucha**).

IN BOTH CASES

The microorganisms transform macronutrients that are present in the food substrate into simpler and often characteristically unique components.

This is done through the work of enzymes whose production is specific to the type of microorganism. Therefore, different species of microorganisms are used to produce different types of food products.

Historical Context

1

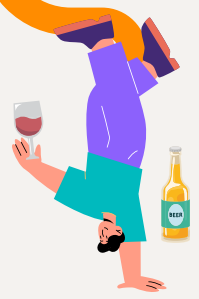
12.000 YEARS AGO

With the transition from hunter-gather communities to sessile agriculture communities, humans have discovered that fermentation provides many important advantages for managing precious food resources.

2

8.000 YEARS AGO

The art of cheese making was discovered between the Tigris and Euphrates rivers in the area of modern-day Iraq, when nomads stored milk in the stomachs of ruminant animals, and it started to ferment.



3

LATER

Egyptian and Sumerian civilizations developed alcoholic fermentations to produce wine and beer. Egyptians also discovered how to make bread rise through fermentation.

Which microorganisms are used in food fermentation?

The most common are **lactic acid bacteria, yeast** and **molds**.

What are the benefits of food fermentation?

1 **PRESERVATION**

Fermentation creates an environment that inhibits the growth of harmful bacteria and molds. **This extends the shelf life of food, allowing it to be stored and consumed for longer periods.**

2 **ENHANCED SENSORY PROPERTIES**

Fermentation can improve foods by lending distinct flavors and improving tenderness, creaminess, or crunchiness.

3 **NUTRITIONAL BOOST**

Fermentation can make certain nutrients, such as vitamins and bioactive compounds, easier for our bodies to absorb and utilise.

4 **DIGESTIVE BENEFITS**

Fermented foods often contain beneficial bacteria or probiotics **that can help balance the gut microbiota and promote a healthy digestive system.**

5 **DETOXIFICATION**

Some fermentation processes can help **reduce the presence of certain toxins or anti-nutrients in food.**

6 **ENVIRONMENTAL BENEFITS**

Fermentation can **contribute to reducing food waste** by extending the shelf-life of foods. Additionally, it offers a way to **use surplus or imperfect produce** that might otherwise be wasted, transforming them into valuable and flavourful products. It allows for **preservation of local produce when it's abundant**, ensuring supply throughout the year and **reducing the need for long-distance transportation**.

7 **CULTIVATION OF MICROBIAL DIVERSITY**

Micro-organisms often act as a diverse community of species to ensure the maintenance, use and consumption of various microbes. This has positive implications for biodiversity and ecosystem health.

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