BAKERY

Bakers' yeast is both the oldest and best-known yeast.

ROLE OF YEAST

Raising dough: when fermenting, yeast produces carbon dioxide.
This gas expands the gluten proteins in the flour and causes the dough to rise.

Revealing flavours and taste: fermentation generates volatile aromatic compounds.
When baked, they give breads from all over the world their subtle and complex flavour profile.

Nutrition and health:

- Long fermentation improves the B-vitamin content of bread, particularly folate, an important vitamin for pregnant women. Folate levels in bread are 2.5 times higher when baker's yeast is used rather than baking powder. Folate (vitamin B9) plays a vital role in essential cell metabolism, such as the synthesis of nucleic and amino acids. This plays an important role against a number of diseases such as cardiovascular diseases, Alzheimer's and certain forms of cancer.
- Yeast promotes the bio-accessibility of minerals present in cereal flours (i.e., zinc, iron and magnesium).
- Yeast fermentation improves the nutritional properties and digestibility of cereals by breaking down certain constituents (i.e., proteins, fibres, sugars).
- Several compounds generated by fermentation, such as certain peptides extracted from flour, have a calming effect on the nervous system.

A SHORT HISTORY

Fermentation has been key to food preservation for at least 15,000 years

- The first traces of bread made from fermented cereals date back 14,400 years to present-day Jordan, i.e. over 5,000 years before the invention of agriculture.
- As early as 3000 BC, the Egyptians and Babylonians were using fermentation to make leavened bread, although they were unable to explain this mystery.
- However, it was not until the work of Louis Pasteur in 1860 that yeast was identified as the micro-organism responsible for alcoholic fermentation.
- The first industrial yeast plants appeared in the 18th century in northern Europe.
- The continuous addition method introduced in Germany in 1915 marked the birth of the modern yeast industry, synchronising the addition of the sugars on which yeast is fed. This avoids any excess sugar in the must, and thus the undesired formation of alcohol.
- Modern yeast production is still based on these same principles. Since then, it has been largely perfected thanks to a better knowledge of raw materials, yeast biology and process automation.

KEY DATA ON THE EUROPEAN BAKING MARKET

- In 2010, the European bread market represented around 32 million tonnes in the 27 EU countries (source: Commission study).
- In the European Union as a whole, the market is divided equally between small-scale and industrial bakers, although there are major differences from one country to another.
- The production of baker's yeast remains the dominant activity of the yeast industry in the EU, although its relative weight is declining in favour of new applications.

FORMAT OF YEAST USED

Currently, only strains of *Saccharomyces cerevisiae* are used in baking. Baker's yeast is available in a wide range of concentration levels (from 5% to 85% water) to meet the current needs of artisanal and industrial bakers.

LIQUID YEAST

Suitable for small-scale and industrial use, with a positive cold shelf-life in positive refrigeration.

COMPRESSED YEAST

In the form of packaged or crumbled blocks with a positive cold shelf-life. Practical and economical, it is widely used.

ACTIVE DRY YEAST

Can be stored at room temperature but must be rehydrated before use. It is popular in regions where temperatures and humidity are high.

INSTANT DRY YEAST

It does not need to be rehydrated before being added to flour. It can therefore be used as easily as compressed yeast.

DRY YEAST WITH REDUCING POWER

In granulated form, it is used by pizza makers because it produces less gas during fermentation and improves dough elasticity which facilitates the shaping of the pizza.

PROSPECTS AND INNOVATIONS

Research into baker's yeast remains very dynamic.

Recent innovations since 2000

During the bread-making process, baker's yeast is exposed to numerous environmental stresses such as air-drying, freezing-thawing and high sucrose concentrations. Three types of yeast have been developed to optimise fermentation under these different stress conditions:

- Osmo-tolerant yeasts (resist osmotic pressure in sweeter doughs).
- Acid-resistant yeasts (resist the stress of antifungal agents in long-life breads).
- Yeasts for frozen doughs (used for long fermentation and in fermentation tanks).

Innovations to contribute to human health

Research has also led to the development of various natural 'clean label' yeast-based solutions to improve the nutritional quality of bread.

- Deactivated salt-reducing yeasts make it possible to reduce the salt content of breads by 20 to 40% without altering the taste or texture.
- New yeast strains improve the bioavailability of vitamins and minerals in breads.

Future innovations to adapt to new uses

- Pursue the development of organic yeast production.
- Develop moisture tolerant yeast, that are ideal to ensure stability of yeast present in bread mixes, and allow an all-in-one bread mix.

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