

## Give us our daily bread today



Anita Petek-Dimmer

### **Can one buy bread of good quality in our supermarkets?**

*“Give us today our daily bread”, request people in the “Our Father”. Everyone knows that here the bread indicates all the foodstuffs. The bread is our food and it is the most important food product. Several expressions stress the importance of the bread, like “having to gain its bread” or the “bread livelihood” which indicates the activity which brings in the money necessary to our daily newspaper. The bread thus means more than only food.*

Our grandmothers still cooked their bread themselves. Often once a month, it was the great day of the bread. In the valley of Goms, in Switzerland, people once made their bread for all the year after the harvests. Still today, the Valaisan rye bread is known and appreciated, even if it is more often produced. Our generation is accustomed to buy every day its fresh bread on the supermarket or the bakery of the corner. **But of what our bread is it composed and at which point it is still healthy?**

The bread, together with potato constitute our basic food. By the bread consumption, European covers 1/3 of his requirements out of proteins and half of his requirements out of glucids. Around 1800, the bread consumption in Germany was spectacularly of 300 kg per person and year. Today, it is still of 84 kg per year and we have the choice between more than 300 various kinds of breads and 1000 kinds of bread rolls. But it is increasingly rare that they come from a true baker, because those are threatened of disappearance. In Switzerland, the number of bakeries passed from 3255 to 2529 between the years 1990 and 2000. Today, the two large Migros distributors and Coop cover 65% of the market of the bread. Even the corn cultivated for the bread does not come solely any more from our country. 20% only of the corn bio of Coop comes from Switzerland. 40% are imported from Europe and 40% of overseas (mainly of Canada and the USA). Migros indicates an indigenous rate of cereals bio of 40% [1].

In Switzerland, we count nothing any more but approximately two dozen true traditional bakeries bio. For the manufacture of their bread, these companies use only raw materials such as the **flour**, the **leaven** and/or the **yeast**, **salt** and possibly **seeds** and **grains**. For the artisanal production, there is no need of “astute” additives. But what is it concerning the bread coming from the supermarket?



During 6000 years, the flour, water, salt and the yeast were enough to make bread. Nowadays, our daily bread contains many **chemical substances** which help the baker to produce a paste which keeps volume, which gives him elasticity, influences the dimension of the pores, shorten the duration of fermentation or obtain a crusty crust. The cereals come from high-output seeds, dependant on **chemical poisons**, growth regulators and of a half ton of artificial fertilizers per hectare.

On the 84 kg of bakers products which each German consumes in one year, **2 kg are only made up of chemical additives**. These additives come from suppliers such as the pharmaceutical giant Hoffmann-La Roche or from pioneers of genetic technologies such as Novo Nordisk, Gist-brocades or Monsanto. According estimates of the “Federal minister of health” (*Bundesgesundheitsministerium*), there is practically anymore a baker left in Germany which manufactures its bread rolls without additives of cooking.

For the customer, it is not possible to detect which “potions” were used, because the **bakers are not obliged to give information on the exact source and the constitution of the additives**. Moreover themselves know them only seldom. According to surveys of March 1998, on thousand German bakeries, hardly half of the questioned saleswomen could give exact and complete information as for the contents of their products. Even graduate bakers, questioned in 150 shops, could not say some more to us on this subject [2].

### **Factory-baked bread**

The consequence of the tendency to factory-baked bread is that one less and less invests in means for the production of the goods and their raw materials.



According to the Association of great bakeries, it is above all, the expenses of distribution, transport, hiring of the locals and personnel which are high. The investment for the purchase of the raw material is of 20% to the great maximum.

Finally, the peasants receive hardly 2 centimes for each euro that the customer pays the baker (according to a calculation of the Association of the German peasants) [3].

Industrial bakeries resemble to a factory today: **the baker makes use of a computer and all is programmed**. The flour, water, the yeast and the additives arrive automatically proportioned from the silos and the cisterns. In a few

minutes, the mass is mixed with mixing machines at high-speed and the additives ensure the success of the paste.

Meanwhile, on their side, small bakeries were also well equipped : for almost each product of the baker, “in advanced prepared” mixtures of cooking are at their disposal. Approximately 98% of the companies use these already prepared mixtures [4]. In order, that the customer continues to believe that its baker of the corner still prepares his products “with the mode of grandmother”, it places in its window a sign which says: “Of our own production”.



There is also fraud with the traditional ingredients. Today, most of the rye breads and mixed breads are made with “**artificial leaven**”. Instead of letting them raise during twenty-four hours, about 2 hours are enough. Many small bakers benefit from this new way of saving time. However, it is precisely the genuine leavened bread which is healthy. Its antibiotic effect is known for a long time. Formerly, one used the bread crumbs of them for the cleaning of the rooms of the patients in hospitals [5].

## Malt

Malt is one of oldest ingredients being used for baking. Today, one finds almost in each kind of powder to raising, the extract or the flour of Malt. To produce Malt, one makes germinate barley and corn which are dried and ground. The flour of Malt containing sweetening substances which nourish yeast, makes it possible to obtain a better fermentation and a lighter paste. This ventilation of the paste causes a greater volume of bread and a better crust. Moreover, this one will be gilded.



## Grease, sugar and salt

The presence of grease in the bread improves quality of the glutens of the flour. The paste becomes more elastic and malleable, which counts above all for the machines. For the production of the bread, one uses especially greases in the form of **hydrogenated plant oil** or of **margarine of baking**. Thus the pores of the bread will be refined and increased and the bread will be cut better, without making crumbs. In almost each bread, one finds grease.

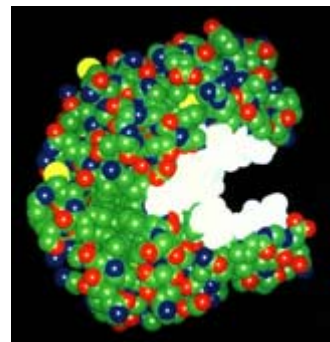
As for sugar, it is necessary to nourish yeast in the bread. Moreover, it increases the volume of the products and improves quality of their crust. One thus finds sugar in almost each bread while for salt, one adds to it especially harmful “iodized salt”. This one blocks the action of the fermentation of yeast and constitutes the principal seasoning of the bread.

## Enzymes

The reason for which one uses already prepared mixtures, containing additives, it is because the value of the enzymes of the flour fluctuates. At each season - and even at each time of the day - the water content of the flour changes and it is more

or less white and sticking. While for the preparation of the paste by machine, it is necessary that its quality remains always the same one. This is why one adds to it enzymes, meaning correcting the nature.

What is especially important, it is to be able to keep the fresh bread for a long time. Each bread becomes dry, one more quickly and another more slowly. Everyone knows that after two days, the white bread is no more usable as for food for ducks. However there exist now additives which make that the white bread remains fresh during two weeks. One of them is called Novamyl (produced by Novo Nordisk). Since 1995, it is signalized already on the **list of dangerous substances** because at this time it had been noted that this enzyme was produced containing **genetically modified bacteria**.



A declaration of Monika Mentschulat de Novo Nordistik shows that even for the manufacture of the bread, all the questions were not elucidated yet: “It happens so much things in a paste which makes it difficult to understand this process. There are theories on the way in which the enzymes act, but they are solely theories!” [6] The enzymes are highly active proteinic connections which initialize biochemical processes or accelerate them. **The maltases** and the **aminases** are essential for the baker. The sweetened substances which are produced in the paste will be transformed by yeast into alcohol and carbon dioxide. **Carbon dioxide** causes small bubbles of air which air the paste. The industrial enzymes are frequently obtained containing **moulds** which were created - as one already said - **using the genetic technique**.

**The protéinases** improve the pores of the bread and mitigate the problem of the brittleness of the crust. **The alpha-amylase** makes the crumb more elastic, improves their color and the flavor and especially increases volume by it. **The enzyme lipoxygénase** is authorized and appreciated to bleach the white bread and the bread toast. **The amyloglucosidases** transform the old bread into a kind of sweetened substance which is added to the cakes. Lastly, the **pentosanase** makes the rye bread more succulent whereas the **proteases** decrease the time necessary with kneading. [7]

### **The allergy of the bakers to the enzymes**

In 1993, scientists of research institute for occupational medicine of “Association of trades” at the University of the Ruhr Bochum (Germany) have discovered that bakers, which one thought that they suffered from one allergy to the flour, were in general not allergic to the flour but to the **enzyme alpha-amylase**. This one is extracted from the mould *Aspergillus oryzae* by the Danish company Novo Nordisk. Following some research, one noted that the increase in the allergies of the bakers - especially the **asthma of the bakers** - coincided with the sales figures of the additives of baking which contained enzymes. In 1993, the Association of the trades had already had to spend 100 million DM for the treatment of the asthma of the bakers. In 1998, the professor in medicine of Bochum, Xaver Baur, discovered that the **Xylanase enzyme** caused also allergies to the bakers.



Meanwhile, one person on ten having food allergies, reacts to alpha-**amylase**. It would be really urgent to give up these substances which contain enzymes for the manufacture of the baking products. However, industrial bakeries affirm that it is not possible. Instead of that, the companies try to limit the harmful effects due to dust, by means of new installations of ventilation. In the companies where one gives up this chemistry, the allergies specific to the bakers suddenly do not appear any more.

But there are not only the bakers who are endangered; bread consumers too. Until now, one supposed that thanks to cooking, the allergenic activity of the enzymes would be destroyed. Now, it is proven that even the consumption of these breads can cause problems similar to the hay fever, sometimes accompanied by eczema. Meanwhile, this allergy became such extensive that the specialists asked for an obligation of declaration of the ingredients used in the bread, so that the people concerned can avoid eating it if necessary. Only, it will be very difficult since almost all the breads contain these substances. The only solution is to make our bread ourselves!

### **Stabilizers and thickeners**

So that the bread remains longer fresh and that it preserves a certain moisture, one uses especially **flour of guar**, **calcium acetate**, **calcium carbonate** and **calcium sulfate**, for a better retention of water.



Very often, one uses also breadcrumbs to preserve succulence. The seed flour of guar comes from a plant which grows in India and it is used in almost all the breads. The calcium acetate is the **salt of the vinegar acid** which prevents the mould to be formed.

The calcium carbonate ( $\text{CaCO}_3$ ) is a white powder extracted from natural lime. It is used like anti-conglomerating and it is only necessary for the manufacture of pastes by the machine. The calcium sulfate ( $\text{CaSO}_4$ ), more known under the name of **plaster**, improves quality of the crust, regularizes the lifting of the paste and acts like stain-remover.

### **Products of acidity**

For the bakery products, one in general uses **citric acids**, **vinegar acids** and **lactic acids**. They are supposed to support the ventilation of the paste and to improve quality of the cooking of the rye flour. Moreover, they give to the breads leaven, this typically sour taste. The use of these elements brings a greater elasticity and solidity of the crust for the cut. By adding citric acid, ascorbic acid or **vitamin C**, one increases the energy requirement in the procedure of malaxation and elasticity of the paste, which increases volume again by it. One could think that the vitamin C is something of healthy but by the process of cooking, it breaks up into acid of thréonine. Experiments on animals showed that the acid of thréonine causes the scurvy, meaning a lack of vitamin C.



Practically all the bakery products contain vitamin C. For the bretzels and the salted bread rolls, one also uses **phosphate** to make the paste sour.

### Treatment of the flour

To treat the flour, one uses the **ascorbic acid (vitamin C)** and **cystein hydrochloride (amino-acid)**. Cystein is a very appreciated substance which is in all the breads. It is drawn from the silk of pig and the Asian human hair. Meanwhile, one finds also synthetic cystein on the market. It lowers the resistance of the tension of the glutens what improves qualities of the paste and the elasticity of the gluten and increases the capacity to keep gas in the paste. It is used especially for the bretzels and the bread rolls. [8]

### Emulsifiers



The emulsifiers bind together substances which normally push one selves back. Thanks to them, grease is distributed intensively on the interior surface of the paste and supports in that the formation of the pores. The pores of the crust are refined, the stability of the paste increases, the quality of the crust is more tender, ventilation improves and the volume of the product increases, etc In the bakery products, one uses in addition to the **monoglycéride** and the **diglycéride** especially **lecithin**. Whereas the “**Esters food of fatty-acids**” (**E 472**) are used only for small bakery, lecithin is present in all the bakers products. The monoglycéride and the diglycéride are only in the bretzels and the bread rolls (containing white or complete flour). But these are not only the various ingredients which harm our health. The stain-removing grease vaporized in the cooking plates, contains **Hydrochlorofluorocarbones** (HCFC) which penetrate in the bakery products that we eat.

### Are the “complete cereals” really complete?

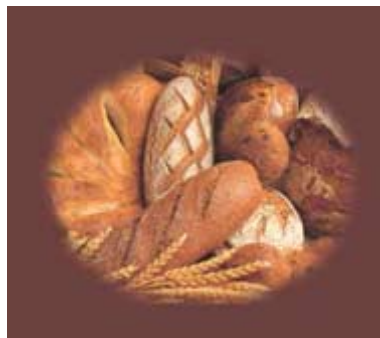
**The complete cereals** are in vogue and they are healthy. The bakers and their suppliers of ingredients of baking know this and try it very well to benefit from the wave. Since one does not find many healthy things in the breads prepared industrially with in advanced prepared mixtures, one prepares them in a way to make a good impression externally and to sell them like wholewheat bread. *The Sonneveld* company sells ingredients powders under the name of “Brotbraun”, which means “**bread browner**”. Its use guarantees a “natural” color of the bread. 1% of this product in the composition of ordinary bread rolls are already enough to give them a “complete cereal look”. If one still sticks some seeds to the surface of the bread roll, the illusion is perfect.



It is also necessary to add **food fibers** to these bread rolls, because it is also a mode trend. Thus one found in pastes, brewers' yeast coming from washed barley sound but also of the thimbles of soya without value in the bakery

products. These remainders of soya are “waste” resulting from the manufacture of margarine which is thus eliminated in an “intelligent” way. Even the American group of powder with detergent *Procter & Gamble* reserved a license, making it possible to add fibers of cotton to the “light bread”. [9] A bread can be called “complete” even if it contains only 90% of complete cereal. For the bread rolls, 30% are enough. Moreover, according to the law, the outer jacket - which contains many food fibers - does not need to be present. All this should not let us to be misled by a beautiful appearance. The only one that knows the true taste of whole-wheat bread, is one that bakes it himself.

## Conclusion



For the majority of the additives that our daily bread contains, there have never been made studies on what occurs during the baking. Here the opinion of Dr. Kläui, of the chemical group Hoffmann-La Roche: “The effects on health of the multiple changes and reactions being intervening during baking, the physiological effects possible and the importance of the many new products are not yet known by far.” [10] Nowadays, two breads out of three are produced industrially. Some bakers are going even further, renouncing to produce their own paste. In the place, they buy frozen pastes enriched by additives for a good conservation during storage but ready to be put at baking. These frozen pastes are particularly appreciated as for the production of the crescents.

Those that are conscious of these realities will be a little more sceptic at the time of their next visit at a bakery shop and they will not be misled by the enticing odour of the fresh bread. Nowadays, to make oneself its fresh whole-wheat bread with ground flour, should pose no problem to anybody. If one adds to it, seeds of sunflower or marrow, what a treat! Stored correctly, this bread remains fresh during several days, without any chemical additive. Please, make the test yourself and surely you will be surprised! Good appetite.

Anita Petek-Dimmer

Source : Newspaper of Association Aegis *Impuls*, Number 29, February 2007

Original title : *Unser täglich Brot gib uns heute*

Translated and published with the pleasant authorization of the editor

French translation : **APV**

### Sources:

- [1] Stucki B., *Konsum, Biobrot im Priifstand*, Bioterra 5/2003
- [2] Grimm HU., *Aus Teufels Topf*, Klett-Cotta, 1999
- [3] Grimm HU., *DER Bio-Bluff*, Hirzel Verlag 1999
- [4] Pollmer U., *Schmelzer-Sandtner, Wohl bekomm' S*, Kiepenheuer & Witsch, L. Auflage 2001
- [5] Pollmer U., Fock A., Gonder U., Haug K., *Prost Mahlzeit*, Kiepenheuer & Witsch, L. Auflage 2001
- [6] Epping B., *Geheime Rezepte*, Hirzel Verlag, 1997
- [7] Pollmer U., *Schmelzer-Sandtner, Wohl bekomm' S*, Kiepenheuer & Witsch, L. Auflage 2001
- [8] Wiedermann A., *Chemie in Backwaren*, Facharbeit Fachoberschule Bad Tölz, 1.3.1995
- [9] Pollmer U., Hoicke C., Grimm HU., *Vorsicht Geschmack*, Hirzel Verlag, 1998
- [10] Pollmer U., Hoicke C., Grimm HU., *Vorsicht Geschmack*, Hirzel Verlag, 1998
- [11] Lutscher P., *Spezial Essen & Trinken*, NR. 4, September 2003