

TURKISH BREAD SPECIALTY

Turkish bakers have always known how to make creative use of wheat flour. Whether it is rings of bread coated with sesame seeds, flaky pastry pouches dipped in syrup or filled flat bread, bakery products are one of the mainstays of Turkish cuisine. But easily the most popular wheat-based product, and the one most often consumed, is ekmek – a light colored wheat loaf weighing about 350 grams with a distinct elongated shred.

A meal without ekmek is unthinkable in Turkey, whether at home or in a restaurant. On almost every street corner there is a bakery where these golden brown loaves of bread are produced. And for most of the working population, it is a daily ritual to stock up on oven-fresh bread for the evening meal on the way home.

GOVERNMENT SPECIFICATIONS

Ekmek is produced mainly by artisan bakeries; industrial bakeries still play a less important role in Turkey. Where bread production is concerned, bakers are bound by special statutory regulations. Since the government is aiming to reduce salt consumption in the population, the salt content of ekmek is restricted to 1.5% (based on the amount of flour), a restriction that affects stability as well as the taste.

In addition, the government is trying to increase the population's intake of minerals and dietary fibers, so bakers have to use flour of the type 700 or higher, a requirement that does not always satisfy the consumers' demand for baked goods with a bright, white crumb.

FLOUR IMPROVERS

A further restriction concerns the use of flour improvers. Since bakers may not use any additives or enzymes

by Martina Mollenhauer

Ekmek is a favorite staple food in Turkey, produced by artisan bakeries according to traditional methods

in the production of ekmek, the flour must be adjusted to the relevant baking properties at the mills. The basic treatment is usually with ascorbic acid and amylase. These are complemented with hemicellulases or lipases, depending on the quality of the flour. If the protein content is less than 11%, the mills sometimes add vital wheat gluten or gluten-strengthening compounds such as EMCEbest WA Pure or EMCEgluten Enhancer 22.

SPECIAL ADJUSTMENT OF ACTIVE INGREDIENTS

One considerable challenge to flour treatment in this case is compensating for the comparatively low salt content and the higher level of extraction. Special adjustments are needed to achieve this. Salt is not only a universal flavor-giver, it also has an important technical function in baking. Sodium chloride lends the dough stability, increases its water-binding capacity and improves its fermentation stability and fermentation tolerance. In a low-salt recipe, ascorbic acid and glucose oxidase or special enzyme systems like Saltase must be added to improve the baking properties.

The higher level of extraction also has a direct effect on the baking properties of the flour. The greater the mineral content, the greater the proportion of dietary fibers, fats, water

soluble proteins and enzymes, while the percentage of gluten protein and starch decreases. Flours with a higher ash content have poorer stability and a smaller baked volume yield than lighter-colored flours with a lower mineral content.

Nevertheless, Turkish consumers do not have to do without their light, airy loaves. With suitable flour improvers, the local mills can greatly enhance the baking performance of wheat flours with a higher mineral content. One effective method is to add specific enzymes in order to improve the stability of the dough, increase the gas retention capability, and thus enhance the baked volume and bread structure.

The following is a typical ekmek recipe:

- 100 kg flour
- 2.5 kg fresh yeast
- 1.5 kg salt
- 67 kg water

PROTECTING THE DOUGH STRUCTURE

Ekmek production is time consuming and labor intensive. Characteristic features are very soft dough processes and gentle preparation. When fork mixers are used, it takes about 45 minutes for the dough to mix thoroughly. During this time it can absorb the necessary amount of water, at least 64%. When mixed in this way, the dough undergoes much less heating than with intensive mixers. Therefore, there is no need to add iced water.

In order to eliminate the risk of premature fermentation, the yeast is not added until the dough has been thoroughly mixed, nor do the bakers add the salt until shortly before the end of the mixing process. This helps to bind the surface moisture that occurs, thus improving the stability of the dough during individual proofing.

The rest of the process also takes patience. After rounding, the dough portions are molded into an elongated shape with very considerable tension. The dough must be left to proof for at least 90 minutes before baking.

In order to strengthen the protein

structure during this long fermentation phase, the mills often treat the flour with glucose oxidase. With its oxidative properties, this enzyme cross-links the sulfhydryl groups of the gluten and tightens the network. It also brings about oxidative gelation of the pentosans. This is accompanied by a strong water binding effect, especially noticeable on the surface of the dough portions as a lack of stickiness.

BAKING IN A WOOD-FIRED OVEN

After an incision has been made in the center or slightly to the side of the loaf, the dough portions are usually baked in a wood-fired oven. The oven is fed with a certain number of fresh dough portions in a kind of rotation system, while the same number of finished loaves is taken out.

This results in a consistently high, natural humidity in the oven, which has a very positive effect on the splitting of the crust. A soft surface is achieved with very short baking times between 15 and 18 minutes. Crisp, crunchy flaking of the crust as in baguettes, for example, is not desirable with ekmek.

MINIMIZING FAULTS IN PRODUCTION

Turkish artisan bakers achieve real artistry with dough and are experts in the production of ekmek. Nevertheless, quality problems may occur in the products as a result of fluctuations in the raw materials due to harvesting conditions, or if the bakery is having to contend with personnel problems or technical restructuring.

The following is an overview of the faults most often encountered and ways of solving them:

Problem: Inadequate shred.

Possible cause: Dough too soft, fermentation too long, ambient air too moist during fermentation, too much steam.

Solution: Adjust the amount of water added, shorten the mixing time. Optimize dough properties and oven rise through the specific addition of

lipase (e.g. Alphamalt EFX Mega or Mulgazym DFX). Adjust steam in multi-deck ovens. Another option: allow the dough portions to form a thin skin before placing in the oven.

Problem: Low volume.

Possible cause: Weak gluten (in respect of quantity and/or quality); low enzymatic activity of the wheat.

Solution: Treat the flour with amylases, ascorbic acid and/or glucose oxidases – Alphamalt A 6050 TR or Alphamalt A 15140, Elco C-100 or Elco P-100, Alphamalt Gloxy 14080 – in order to stabilize the dough and improve the processing properties and baked volume.

Problem: Low water absorption.

Possible cause: Inadequate gluten quality or quantity; lower pentosan content.

Solution: Add hydrocolloids, vital wheat gluten or enzyme compounds (e.g. EMCEgluten Enhancer 22, EMCEbest WA Pure) in order to increase the water absorption of the flour.

Problem: Crust too light in color.

Possible cause: Low-enzyme flour, baking temperature too low.

Solution: Add amylase (e.g. Alphamalt A 15140 or Deltamalt FN) or malt flour (e.g. EMCEmalt) in order to intensify the Maillard reaction and promote browning. Increase the baking temperatures.

Problem: Dough not elastic enough.

Possible cause: Gluten too firm, too little added water.

Solution: Soften the dough and increase its elasticity by adding amylase (e.g. Alphamalt A 15140), hemicellulase (e.g. Alphamalt H 20434) or – less common – protease (e.g. Alphamalt Pro). Add more water. Mix doughs sufficiently. **WG**

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