



Animal proteins and enzymes - effective dough and bread improvers

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The most important task for bakery enterprises in market environment is production of bakery products with the best quality parameters.

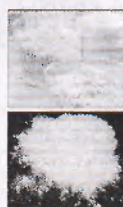
Estimating the quality of bakery products, consumers pay maximum attention not just on a color of bread crust, its condition and shape of goods, but on texture indexes of crumb. In the process of manufacturing of bakery products, wheat flour is raw material with the most spotty quality, that's why obtaining of finish products with defined indexes of texture can be provided by regulation of rheological properties of semi-finished products, considering baking properties of raw materials and product's formula.

Protein concentrates obtained from collagen raw materials and enzymes (e.g., transglutaminase) are considered as the most perspective bakery improvers, which can strengthen the weak structure of bread dough.

Usage of such additives allows excluding chemical supplements from product's formula, improving technological properties of flour and obtaining ecologically friendly and safety products.

The main advantages of concentrated animal protein concentrates are natural origin, ability to improve consistency and increase the output of food. All these supplements are 100% natural products.

These additives possess good gelling and emulsifying properties. They work well in systems containing proteins, starch, fats. We believed that it was necessary to test the effectiveness of their action in bread dough.



SCANPRO T 95
(BHI,
DENMARK)

Helios - 11
(TOMIG,
UKRAINE)

FAP
100% NATURAL
Enzyme TG

Benefits of usage of protein concentrates and enzymes:

- Wide range of functional and technological properties;
- Absence of any food supplements with E-index;
- Exclusion of food chemical supplements from manufacturing turnover;
- Ease of use, property retention during longtime storage;
- Ability to improve technological properties of bakery products and increase the product yield

Standard organoleptic and physicochemical quality assessment methods of flour, additives, semi-finished and finished products.

Research of effective viscosity of unleavened dough was conducted on a rotary viscometer. Viscometers can determine main rheological parameters of liquids - effective viscosity and its dependence on shear rate for samples that were investigated as non-Newtonian fluids.

Efficiency and perspective of using protein concentrates and enzymes:

- Increase of bread volume (by 30-50%);
- Increase of flour strength (by 40-80%);
- Availability of excluding the oxidizing agents from technological process and product's formula;
- Expediency of using additives in gluten-free bread.

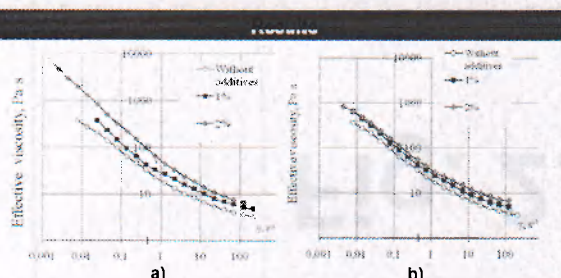


Fig. 1. Change in effective viscosity of the dough samples from shear rate after maturation in 180 min.

a) - with Scanpro, b) - with Helios

It was found that with increasing of additives content from 1 to 2% the increasing of dough's viscosity was observed. After dough maturation during 180 minutes (Fig. 1) the similar dependence of viscosity increasing of dough with Scanpro and Helios was found.

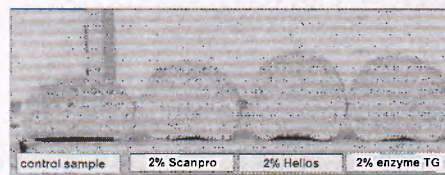


Fig. 2. Examples of wheat bread with FAP Helios (beef) and Scanpro (pork)

Table 1 - Quality indexes of bakery products with additives

Quality indexes of bread	Quality estimation of bread depending on type of additives			
	Control sample	Scanpro	Helios	Enzyme TG
Organoleptic characteristics	Typical for this type of product			
- taste	Typical, without contaminants			
- flavor				
- color of crust	Yellow-brown	Bright brown	Bright brown	Yellow-brown
- elasticity of crumb	Elastic, crumb quickly takes the primary form after slight pressure			
- Structure of crumb grain	Uniform, average size crumb grain	Uniform, small, thinvalled crumb grain		
Physical-chemical characteristics	43,0	43,0	42,9	42,8
- moisture of bread, %	0,37	0,48	0,55	0,55
- formstability, %				
- yield, %	140,8	143,1	146,7	145,2

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