

## USE OF COMPOSITIONS OF FOOD ADDITIVES IN THE MANUFACTURE OF SMOKED MEAT PRODUCTS

Prokofieva L.U., Pancratov V.A. Moscow State University of Applied Biotechnology, Talalikhina 33, 109316, Moscow, Russia

Andreenkov V.A. The All-Russian Meat Research Institute, Talalikhina 26, 109316, Moscow, Russia

Dudin M.V. OSC MMPP "MIKOMS", Talalikhina 41, 109316, Moscow, Russia

The problem of improving organoleptical characteristics of meat products, increasing their yield is always the urgent one in the meat industry. Food additives capable of increasing the intensity and stability of colour, water-holding capacity and improving the flavour and aroma of finished products have been used for this purpose during many years (1).

Ascorbic and nicotinic acids, gluco- $\sigma$ -lactone are traditionally used to increase the colour stability in processing technologies of different meat products. These additives are introduced at the stage of composition of ground meats. To improve the taste of sausages that are produced from the raw materials having already lost to some extent their original gustatory and aromatic properties the sodium salt of glutamic acid is used with good results (2). Various spices, usually in dry form, are used to impart specific taste and aroma to sausages. However, they are often affected with fungi and contaminated with foreign matter. The spices can also be used as essential oils, CO<sub>2</sub>-extracts, or oleoresins. All the above additives are introduced into the products at the stage of meat comminution. Using these components in dry form and their small amounts make their uniform distribution over the whole volume of the product difficult. The incorporation of such multi-component systems into the comminuted meat could be significantly simplified combining all these food additives into one liquid form. Moreover, in the manufacture of smoked meat products it is possible to use the flavouring additives by injection with the subsequent massaging.

As the experience shows it is rational in the meat industry to use direct emulsions. They can be thinned with water in any desired ratios, this allows to avoid the problem of uniform distribution of the components in the product volume. It should be noted that in the manufacture of such products as smoked foods it is very difficult to use food additives in a loose form, because dry spices put to the surface of the product do not penetrate into its depth.

Table I shows the results of the evaluations of the aroma of meat products manufactured with the use of flavouring emulsions. The emulsion in the manufacture of the sausage "Russkaya" and sardelles "Lubitelskiye" was introduced during the operation of the cutter. In the manufacture of carbonade and neck the emulsions were incorporated by injection.

The products as manufactured by standard technology were used as controls.

As can be seen from Table 1 the finished products have a more stable aroma.

The effect is even greater when using the complex additives as solubilized systems. The aroma, taste, colour are preserved much better, and the yield of the final products is increased. To obtain such systems new ecologically pure and effective emulsifiers and solubilizers were needed. We have synthesized a number of such biologically important surfactants mainly being the monoesters of dicarboxylic acid. A preparation "Oxyant" obtained from ecologically pure raw materials proved to be the most promising emulsifier and solubilizer. Its use was allowed for the manufacture of foodstuffs.

Meat products	Used flavouring emulsion	Evaluation of aroma according to 9 point scale		Evaluation of aroma after 48 hours of storage	
		Product	Control	Product	Control
Cooked sausage "Russkaya"	"Chesnochnaya"	7.2	6.6	6.8	6.1
Sardelle "Lubitelskiye"	"Chesnochanya"	7.1	6.9	6.7	6.2
Carbonade	"Mozhzhelovaya"	7.0	6.7	6.8	6.4
Neck	"Mozhzhelovaya"	7.0	6.6	6.7	6.4

Table 2 shows the results of the tests of solubilized compositions of complex additives, having the name "Effectan", comprising citric acid, ascorbic acid, phosphates and sodium glutamate, a food emulsifier and a flavouring composition.

Meat product	Type of "Effectan" used	Organoleptical characteristics according to 9-point scale								Increase of the yield as compared to the control
		colour		taste		aroma		appear.		
		fin. prod.	after 48 hrs	fin. prod.	after 48 hrs	fin. prod.	after 48 hrs	fin. prod.	after 48 hrs	
carbonade	1	6,9	6,6	7,3	6,8	7,2	7,0	7,1	6,8	19%
control	-	6,7	6,3	6,9	6,4	6,9	6,7	6,8	6,6	
neck	2	7,1	6,7	7,0	6,7	7,3	7,0	7,1	6,8	25%
control	-	6,8	6,4	6,7	6,4	6,9	6,7	6,8	6,7	
ham	3	6,9	6,7	7,0	6,8	7,1	6,8	7,0	6,8	20%
control	-	6,5	6,4	6,5	6,3	6,4	6,2	6,5	6,3	

Various types of "Effectans" differ in the sets of the used essential oils. Thus, "Effectan" 1 contains in the flavouring composition an essential oil of juniper, "Effectan" 2 - an essential oil of garlic, "Effectan" 3 - oleoresin of paprika. As can be seen from Table 2, a solubilized composition of food additives both improves the colour, taste, aroma and increases the yield of the finished products.

At the present time the flavouring emulsion and compositions "Effectan" are in use at the meat-processing plants of Russia and countries of CIS.

### References

1. Prokofieva L.Yu., Pancratov V.A., Andreenkov V.A. Use of biologically important surfactants in the meat industry. - Collection of scientific works of VNIIMP, 1996, pp.110-116
2. Lavrova A.P., Krylova V.V. Technology of sausages - M.: Pischevaya promyshlennost, 1975, p.50