

Biochemical description of anti-diabetic sausage.

Blinov V.A., Giro T.M., Derkin A.N.
Saratov State Agrarian University named after N.I.Vavilov.

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Diabetes is one of the most widely distributed diseases. An arsenal of the treatment methods includes such aspects as a diet, physical exercises, sugar burn-away tablets, insulin, officinal remedies of hypoglycemic effect, the systematic instruction of the patients, their self-control and others. Up to the present time the diet of the diabetics has no strongly pronounced specific differences in comparison with other diseases. Of course, it must contain minimum of carbohydrates, fats, common salt, sufficient supply of vegetables, berries and fruit. However, medicinal meat products, which could be recommend for the diabetics that have chronic deficit of the proteins, aren't still worked out.

The purpose of our research consists in working out the sausage technology for the diabetics, in the recipe of which some powder of the medicinal preparations 'Arphazetin', which possesses hypoglycemic effect, is added. That sausage was called as anti-diabetic sausage, a technology of preparation of the famous anti-diabetic sausage, that presents adequate control, is the basis of that sausage.

The produced meat products were analyzed according to 15 methods, which were grouped in the following way: physico-chemical methods-pH, buffer capacity; indicators of protein metabolism and enzymes- non-protein nitrogen, creatines, creatinines, catalase, amylase and lipase activity; indicators of carbohydrate metabolism- glucose, glycogens, phosphoenolpiruvat, phosphotrioses; parameters of lipid metabolism- cholesterol and lipoproteins of low density(LPLD). The major part of these methods was modified in our laboratory and adapted to tissues. According to specified indicators, controlling and tested consignments of sausages were analyzed at the end of the 1,2,5 and 10 days after preparation and storage at temperature of 4 C.

It was established that preparation 'Arphazetin', containing the sprouts of bilberry, pods of haricot beans, roots of Aralia Mandshurica or Echinopanax, Equisetaceae, hips of wild rose, St. John's wort and flowers of camomile stabilizes pH in sausages which during all the test was being fluctuated within the narrow limits: 5,63+ 0,14-5,85+ 0,05. The buffer capacity increased on 27,8% on the average, in antidiabetic sausages, so that enlarges the opportunity of its utilization in the organism.

Under the influence of medicinal plants of hypoglycemic effect, disintegration and protein compound catabolism are increased in sausages, the result of this was the increase of nitrogen metabolism final products(table 1).

Naturally, the preparation of sausages must be accompanied by the reduction of enzyme activity. However, if the powder of medicinal plants was added in meat products, their remaining activity was higher than in sausages of controlling consignment. On the average the activity of catalase exceeded the control data by 47,5%, the activity of amylase by 54,5% and lipase by 16,4%. Moreover, the considerable activity of lipase was induced by mixture of spleen and pancreatin.

It was turned out in the next tests that the content of free glucose and glycogen was a bit higher in antidiabetic sausage. At the same time medicinal preparation of hypoglycemic effect was reducing in sausages the concentration of phosphotrios(glyceraldehydphosphat and dioxycetonphosphat) and phosphoenolpirovinograd acid.

It's very important, from the diabetic point of view, that after the introduction of the powder of medicinal preparation 'Arphazetin' into the recipe of sausages the cholesterol content was reduced in them. Moreover, it kept falling as far as the increase of meat date storage.(table 1)

According to ordinate axis on the left- mm/l cholesterol ; on the right g/l LPLD.

According to abscissa axis-days of testing.

The lines on curved ones are real intervals of medium.

At the same time, parallel with it, in the sausages of tested consignment, the content of lipoproteins of low density, the most aterogenic lipid fraction, was being reduced.

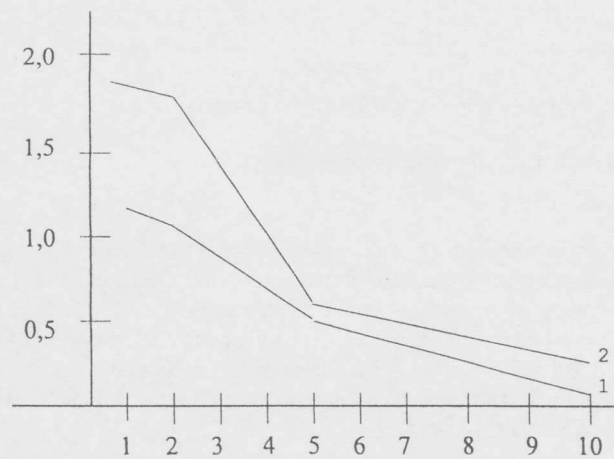
So, we have worked out a new technology of antidiabetic sausage. It is also found that these sausages have more stable p H, increasing buffer capacity, intensive protein destroying and their change into nitrogen compounds. It was observed residual catalase, amylase and lipase activity reservation. The cholesterol concentration was also reduced. The anti-diabetic sausage is found to level some metabolic risk factors in animal's life with ditizonic diabetes.

The influence of plant bioaddition on the content of some indices of nitrogen metabolism (mg/g) in sausages.

Table 1

Indices	No protein nitrogen		Creatin		Creatinin	
	I	II	I	II	I	II
1	32,9±3,2	39,2±3,7	37,1±0,58	14,3±2,32	16,0±0,15	14,0±0,15
2	32,3±3,2	38,5±4,0	35,6±0,62	13,8±1,88	15,8±0,13	13,7±0,12
5	20,7±4,0	27,1±1,6	18,6±1,36	11,5±1,23	13,0±0,12	12,0±0,10
10	12,5±2,3	21,1±0,7	11,6±0,07	9,3±0,04	7,0±0,03	5,0±0,05

I controlling sausages with 5% cellulose;
II tested consignments of sausages



Picture 1. The change of cholesterol(1) and lipoproteins of low density(2) content in sausages with plant bioadditive of hypoglycemic effect.