



PROTOSUBTILIN

The neutral thermostable protease
manufactured by “Sibbiopharm” Ltd.

“SIBBOPHARM” LTD. TODAY:



“Sibbiopharm” Ltd. is a modern biotechnological enterprise, producers and sells microbiological products, delivers to specified points, advises on application issues.

The competent personnel in number of **293 people**
50 years of experience in the production of biotechnology products

The total volume of commodity production, depending from nomenclature, **varies from 8 to 15 thousand tons per year**

Since the year 2012 Company’s management system has been certified by certifying agent TÜV NORD CERT (Germany) in accordance with **ISO 9001:2008**.

The consumers of product are **640 enterprises** of Russia Federation. The products are delivered in to **15 countries of the world** (the CIF countries, Europe, South America, Asia, Africa)

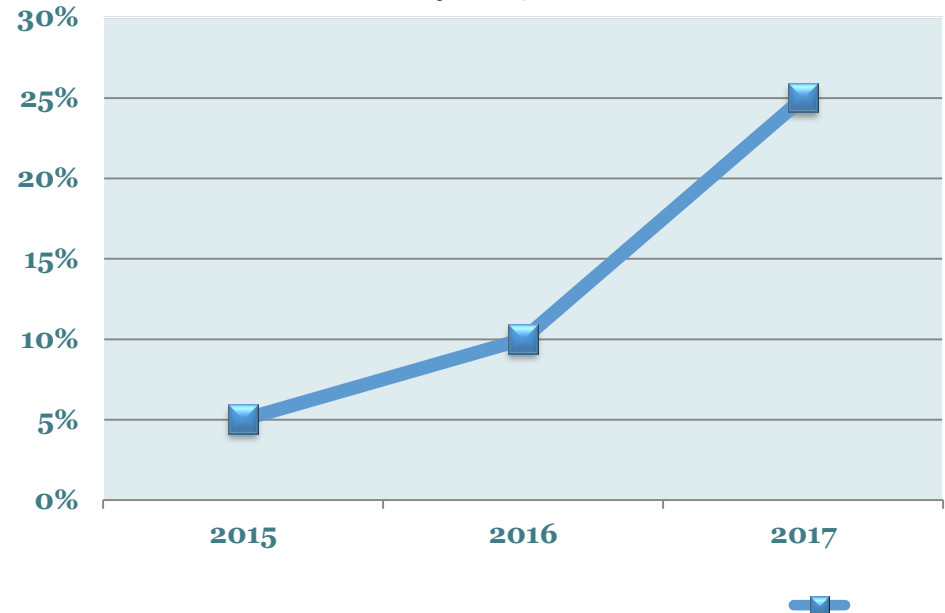
The manufacture has the reserve land areas for the expansion production and **can increase output in 3-4 times with a minimum cost.**

MODERN MARKET TRENDS

The use of protease enzymes increases every year

- Decrease of feed prime cost
- Expanse of the limits of input of hard-to-digest raw materials
- Increase of productive indicators of breeding
- Reduction of the amount of nitrogen in the dung

The number of enterprises using protease enzymes, %



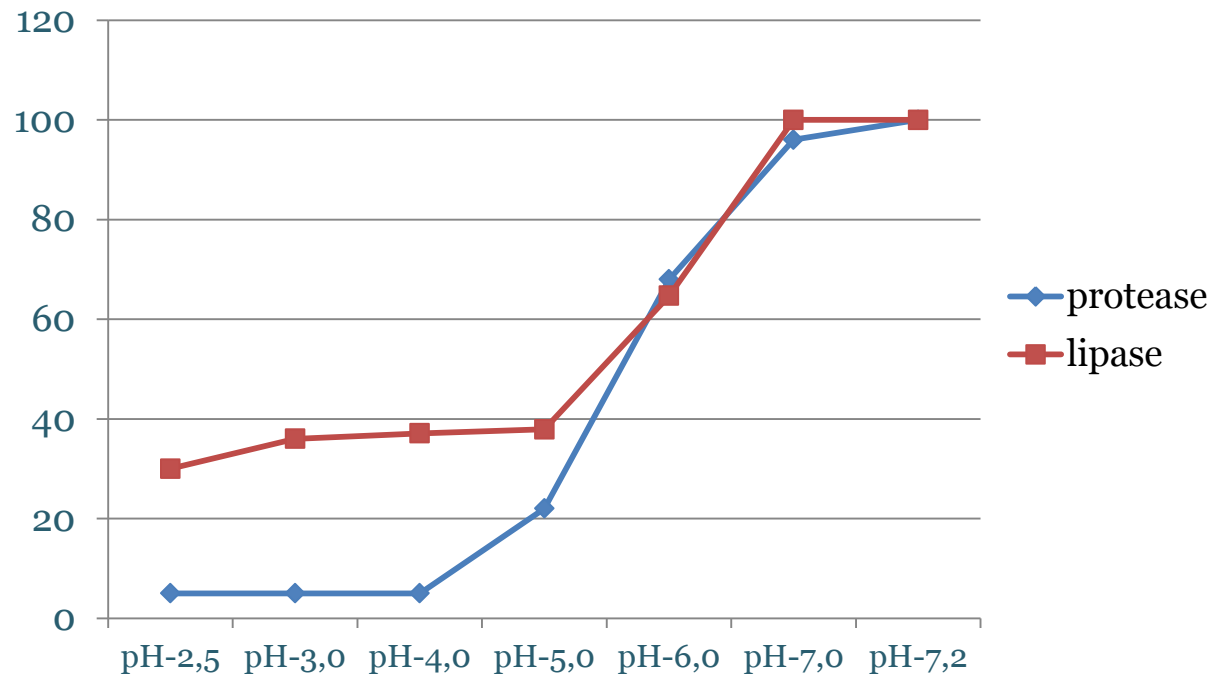
PROTOSUBTILIN

The enzyme for improving the digestibility of feed protein components, lowering of anti-nutrients influence, including protease inhibitor bean cultures



The main enzyme	Activity, U/gr
Protease	250
Lipase (associated activity)	280000 U/gr
Consumption rate "Protosubtilin 250"	200-300 gr/ton
Effective range	pH 5,0-8,5

The enzyme product Protosubtilin activity in the gastrointestinal tract of animals and poultry, (temperature 40°C, pH 3,0 - 7,0), %



ENZYME PRODUCTS

OPERATION MODE

The requirements for enzyme products:
temperature 37-42°C and pH 4-8 in intestine of poultry;
body temperature 39-42°C , gizzard pH 3-5,
intestinal pH 5.8-7, fatend pH 6-7.



Poultry intestinal segments	pH
Crop	4,5-6,0
Proventriculus, Gizzard	3,0-5,0
Duodenum	5,8-6,4
Jejunum	5,8-5,9
Ileum	6,3-7,0
Ceca	6,3
Fatend	5,7
Cloaca	5,9

PROTOSUBTILIN

THERMOSTABLE PROTEASE




Product	Activity	Residual activity during heating by various temperatures during 30 second, %	
		65°C	85°C
Protosubtilin	protease	100	100

The comparative analysis of protease enzymes



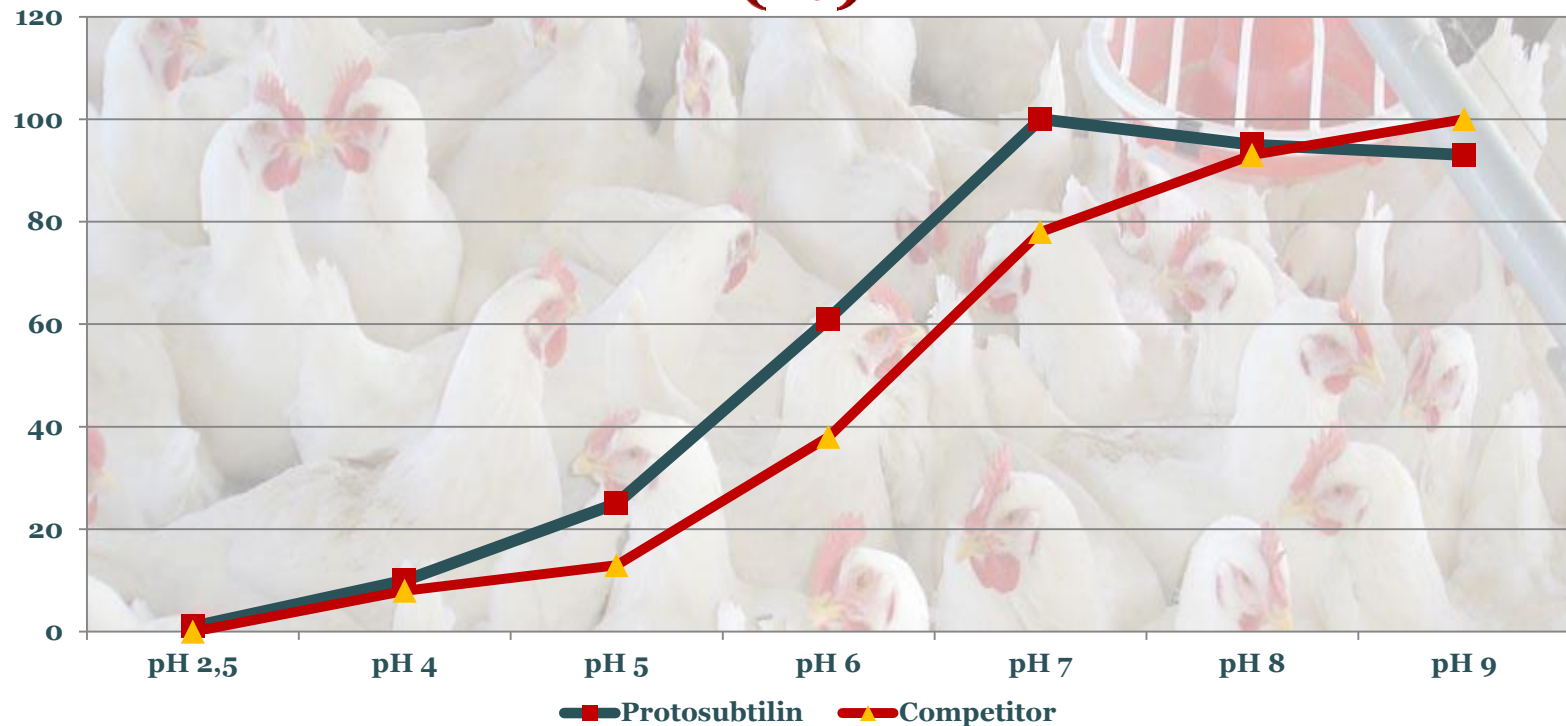
	The proposed activity according to manufacturer's methods, U/gr.	Activity, U/gr, t 40°C (body temperature of poultry and animals)			The product dosage, the activity in jejunum≈ pH 7.2		Price
		pH 6	pH 7.2	pH 8	gr/ton feed	U./ton feed	
Protosubtilin 120	120	106	172	164	600	103 200	4,2
Protosubtilin 250	250	220	357	341	300	107 100	3,4

Matrix of Protosubtilin 250 (layer)



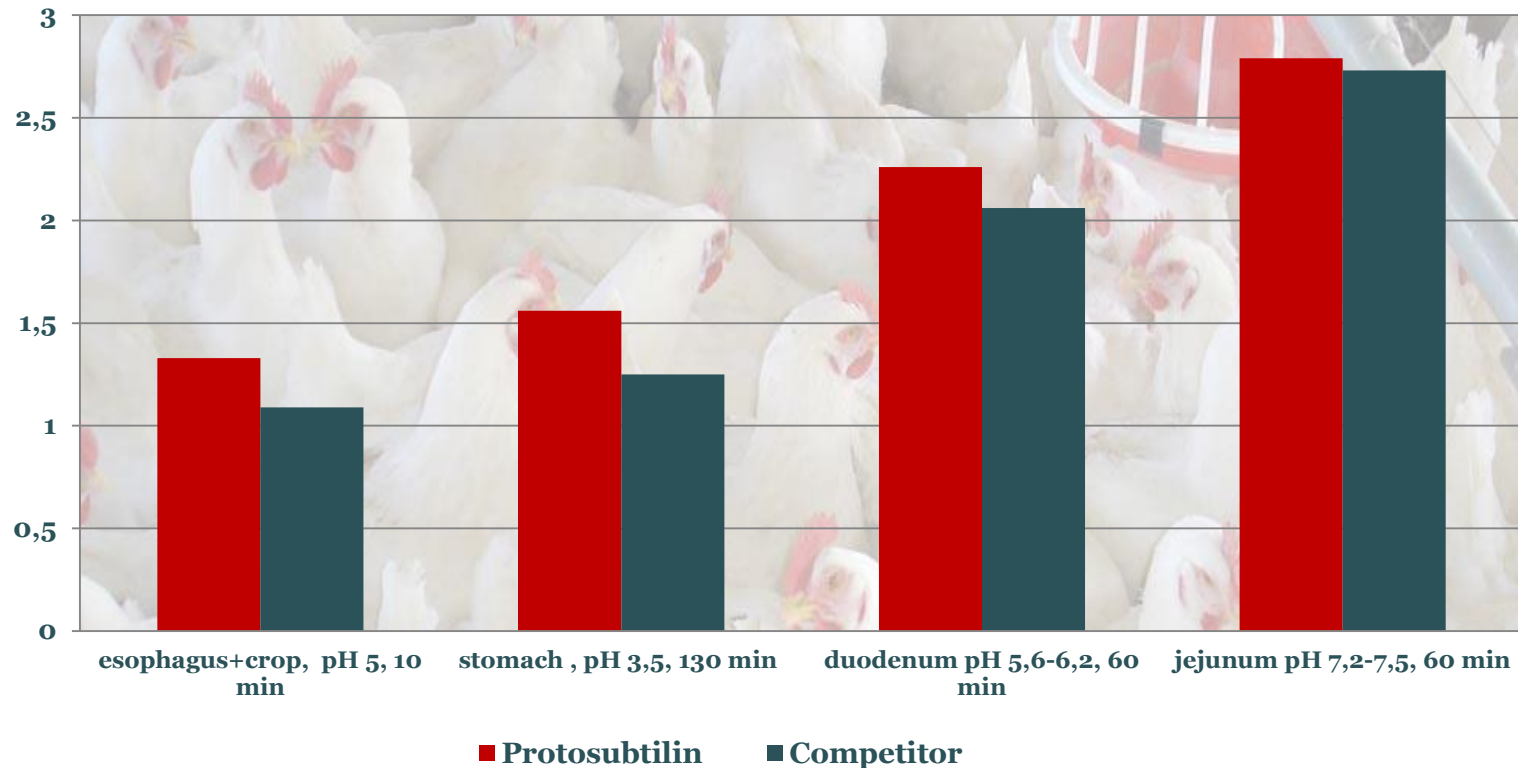
Index	Phase of productivity (20-45 weeks)		Phase of productivity (46 weeks and more)	
	K	Nutrient equivalent, %	K	Nutrient equivalent, %
<i>lysine</i>	3	80	4	100
<i>available lysine</i>	3	68	4	86
<i>methionine + cysteine</i>	3	72	4	90
<i>available methionine</i>	3	38	4	48
<i>threonine</i>	3	56	4	66
<i>available threonine</i>	3	50	4	58
<i>arginine</i>	3	90	4	114
<i>available arginine</i>	3	76	4	98

Comparison of the protease activity of Protosubtilin and the competitor with a change in pH in the gastrointestinal tract (%)



Protosubtilin, in comparison with the product of the Competitor, has a higher activity in the conditions of the gastrointestinal tract (temperature 40°C, pH 4,0-8,0). The protease activity of Protosubtilin increases from 0.8% at pH-2.5 to 100% at a pH close to neutral (7.2 U/pH).

The results of hydrolysis of the substrate with imitation of the gastrointestinal tract of the bird using Protosubtilin and a competitive product. Dosages (gr.)



Thus, as a result of simulating the digestion of poultry, Protosubtilin works more efficiently in all parts of the digestive tract. It is more efficiently used in feeding of poultry, in comparison with the competitor product.



Thank you!

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