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On the Synthesis of Antibiotics for Agriculture

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Annotatsiya: Traditional concepts about antibiotics or antibiotics have emerged due to their application in modern medicine and veterinary practice. Some antibiotic preparations are used to stimulate animal growth, combat plant diseases, while others are used to conserve food and conduct research (in the fields of biochemistry, molecular biology, genetics, oncology).

Keywords: Antibiotics, medicine, stimulation, conservation, biochemistry, molecular biology, genetics, oncology, bacteria, fungi, viruses, Tetrocyclines, 7-chlortetracycline, oxithracycline, amphoter compound.

Introduction. «The term antibiotic belongs to the pen of M.M.Shemyakin, A.C.Xoxlov (1961), which they believe includes substances that have the ability to selectively strangle the destruction, growth, and development of microorganisms (bacteria, fungi, viruses) of any organisms.
Antibiotics known to this day are classified into the following groups, depending on their chemical structure:
1) acetic compounds (except fatty acids and terpenes);
(2) alegic compounds (e.de tetracyclines);
3) aromatic compounds;
(4) Xinons;
(5) Ghettosic compounds containing oxygen;
(6) Ghettosic compounds containing nitrogen;
7) Peptides.

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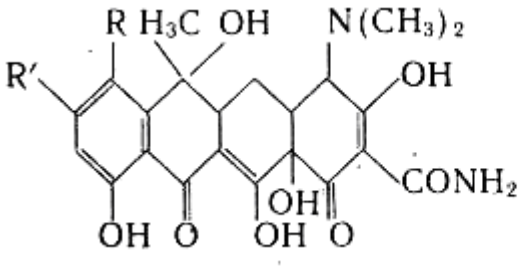
A third of all antibiotics have been identified in their chemical structure, half of which can be obtained on the basis of chemical synthesis. Therefore, the extraction of antibiotics using microbiological methods is one of the most pressing issues.
The synthesis of antibiotics by microorganisms is one of the forms of antagonism, formed and strengthened in the evolutionary process, which is an irritable feature that ensures the formation of antibiotic substances that characterize the conversion of fluids, which are specially calculated for each species. Antibiotics affect the cell of an alien microbiome, which undermines its development. Some antibiotics interfere with the synthesis of bacteria during the reproduction period, others affect cytoplasmic membranes, change their permeability, and third varieties affect fluid metabolism as ingibitors.

Results of the study Tetrocyclines are widely used both in medical practice and in the manufacture of feed preparations. Among them, a number of industrial-scale preparations for agriculture are produced on the basis of 7 chlortetracycline (1) and 8-oxithracycline. Antibiotics with tetracycline have the following structural formula:



(I) $C_{22}H_{23}ClN_2O_8$
bunda $R = Cl;\ R' = H$

(II) $C_{22}H_{24}N_2O_9$,
bunda $R = H;\ R' = OH$

This amphoter is a compound, has the ability to form salt with acidity and bases, dissolves poorly in aqueous solutions of pH from 4.5 to 7.5, pH dissolves well in solutions below 2.0 and more than 8.0. It is also intofuncable to the effects of oxidizing, including air oxygen. *Actinomyces is* used to produce chlortetracycline on an industrial scale, and *Actinomices rimosus* fungi in the production of oxithracycline .
The industrial-scale preparation of chlortetracycline is produced in the form of biovit-20, biovit-40 and biovit-80, which contains 20, 40, antibiotics, and 3.5.8 mkg of vitamin B1 kg80 g1 g_{12}, respectively, at the expense of each preparation . Preparations also contain microelements, proteins, fats, and mineral salts. Adding a 15-biovit antibiotic to a ton of animal food rheumatoid arthritis allows you to increase the mass of animals by 30%, and reduce feed consumption by 5-10%. Antibiotics provide intensive development of young cattle and poultry, as well as the prevention of gastrointestinal and lung diseases. These antibiotics have the power to have a broad spectrum antibacterial effect, from appearance to brown- brown.20 g
Occiterracy is produced in the forms of terravit E (melter) and terravit EO (food) for livestock. Industrially produced terravit-5, terravit-10 and terravit-50 are hungry-brown, bitter-flavored and mold-smelling substances that contain 5, 10, clean antibiotics in each preparation account. Terravit E-20 May has liver color powder, 20 units/mg of activity; Terravit E-40 has a hungry-

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brown color powder, contains 40 units/mg of antibiotics, terraritis EO-40 medium-sized liver color powder, contains 40 units/mg of antibiotics. In addition to antibiotics, the composition of the drug includes vitamin B1 kg50 g_{12} , but its quantitative indicator is not normal. Adding 15 antibiotics to 1 t of animal nutritional rheumatoid arthritis increases its weight by 10-20% in one way or another, causing it to exceed the same amount of food. Terravit - 5, - 10, - is used in combination with concentrated feed, such as 50s and EO-40 biovit. Calves and piglets are given terravit E aqueous solution or dissolved in milk from an early age.20 g

In many ways, the technologies for isolating food preparations from chlortetracycline 7 and 8 are similar, so information about these issues is generally highlighted and some of their differences are considered more perfectly. When performing the biosynthesis of occituderasiklin, spores of the microbe, which serve as a growing material, will have to be selected for a variety that is stored at 4-6 for up to 3 months. In factory conditions, it is generated three times when the temperature is 26-28. When growing the producer, the mixer is always multiplied at a speed of 160-180 months./min of the mixer apparatus twice in a 200 ml-sized food environment in a 750 ml tube, and then moved to the growing apparatus and multiplied in it. The intermolecular force from all these filaments is enough to support more than the$^{o}C^{o}C^{gecko's}$ body weight—when it is skitting upside down across a globe!

Usually cultivating a producer prepares the reactionary environment in table 1 content.

Table 1

The composition of the reactionary environment required to isolate tetracycline
In %s

№	Name of substances	%
1	Make-up flou	6.0
2	Corn extract	1.5
3	Ammonium sulphate	0.6
4	Sodium chloride	0.4
5	Chalk	0.8
6	Water	The rest of the piece

During the main fermentation phase, the same nutrient environment is also used, only cobalt chloride is added to the volume of reaction fluid in the environment to enhance the formation of vitamin B_{12}.1 m^{3}1 g

Microbial growing material prepared for planting is transmitted for basic fermentation at the rate of 10-15% of the total volume of enzymes. All technological indicators of conducting this process on an industrial scale are carried out in the manner of a previous stage of growth apparatus. Aseptic requirements are observed at all stages of biosynthetic processes. The process of biosynthesis always occurs with the formation of large amounts of foam in a practical way, so the size of the enzymes can be replenished only up to 50%. Cultivating and multiplicating producer cells can be carried out at the limit of a much broader border pH indicator, but depending on the variety of producers used, the synthesis and assembly of antibiotics will also vary. Therefore, it will

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be necessary to properly monitor these activities. Jar checking is carried out according to the indicators of pH, temperature and aeration. The biosynthesis of occidrasiklin ends at 26-28 for 100-120 hours. Initially, there was a rapid increase in mycelium, in which the sources of carbon, nitrogen and phosphorus contained in the environment are intensively absorbed, requiring intense aeration.ºC

At this stage, an antibiotic is practically not formed, but a smaller amount of pyrolysis and acetic acids are formed, and the same substances are later used by fungi for the biosynthesis of tetracycline. The liquid in the environment, which contains up to 4.5% dry mode, is transmitted towards a vacuum-wheat device, where it is evaporated at 50-60 until its dry mass reaches a rate of 12-15%. In this way, the concentrated mixture is transferred to a spray-drying device and dried. Sometimes, when performing this process, an additive mixed with food in one way or another into the liquid of the environment is dried together, which in turn is added to the liquid account if sugar beet turpentin (waste) is used as such an additive.ºC1 m³250 kg

Terravit -5, -10, -50 is a dried mass of ambient fluid grown by the Act. rimosus producer, whose composition is an antibiotic produced in the environment and an additionally standardized finished product.

Terravit-E is a filter of the liquid in which the producer is grown, which is later a dried mass in a purkab-drying device, which serves as the basis for obtaining terravit-EO after the residual dried that has not melted during the filtration process. All terravit preparations at a sufficient level of activity are standardized by adding sugar beet radish or corn to it. Terravit preparations brought to the ready product level are packaged in paper bags weighing heavily. This ready-made product is stored in storage facilities with a dark, temperature of no more than 20 and humidity of no more than 75%. The duration of the storage of drugs in this situation is 6 months. Sporadic material used in the production of biovit is grown at planting stations and distributed to factories. According to standard requirements, the activity indicator of this material should not be less than 3000 units/ml. Also in production enterprises, biovit production can be grown in a nutritional environment consisting of 26-28 to 26-28, 24-30 hours (in % of the account), corn extract-3, and un-3. The mixture is delivered to an indicator of 6.7-6.9 using 30% carving sodium. The growth and reproduction apparatus will include the above-prepared "planting" material in the amount of 1m20 kgºCºC³ ambient liquids. Growing the producer is carried out in the same composition environment at 27-28 for 30-40 hours by constantly mixing the aerated and ambient mixture, adding a sterile foam cooler. Table 11 content of the nutrient environment is used to perform the biosynthesis of chlortetracycline in the main enzymes. 0,7 lºC

The mixture is added 0.0001% as the original substance. Before starting to grow the producer, the pH indicator of the environment is brought to 6.6-6.7. Growing a producer on an industrial scale is carried out for 60-70 hours under good aeration conditions. The temperature is maintained at around 26-28 during producent reproduction and biosynthesis of the antibiotic. The end of the biosynthesis process will be learned by changing the pH of the environment to 6.9-7.2. The resulting initial producer liquid is processed according to two different methods. The first of them is the same style used in the manufacture of terravit.ºC

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Table 2 in %
Content of the nutrient environment used to perform biosynthesis of chlortetracycline in the main enzymes (in % account)

№	Name of substances	%
1		10
2	Un (kraxmal ulushi 51 %)	5.0
3	Ammonium nitrate	0.7
4	Chalk	0.5
5	Sodium chloride	0.3
6	Cobalt chloride	0.0001
7	Foam cooler	0.2 gacha

The resulting producer liquid contains up to 3% dry mode, which is concentrated between 10 and 12% by vacuum-evaporation; Conservant-sodium sulfate is added at the rate of 2 to each 1m 3 volume of this concentrate and dried in a spray dryer. If the amount of antibiotics in the account of a dry drug is higher than in technical conditions (usually it is 90-150 g/kg), then the product obtained will have to be standardized by adding an additional amount. When standardizing biovit, very crushed bran, unleavened flour, corn or soybeans are used as additives.3 kg1 kg
The following technological approaches are used when working on the basis of the second method:
1. A separate container is treated with cooled lime in order to transfer the tetracycline dissolved in water to calcium salt. The resulting slope is transmitted to the filter-press.
2. The sink from the filter-press is overturned into a bunker, which is granulated and then dried.
3. Dried granules are transmitted through pipes for grinding. The resulting product is appropriately standardized by adding additional substances. Biovit preparations are packaged in paper bags from 10 to two floors. It is kept in dark barns with temperatures not exceeding 25. The storage period is 6 months for biovit-20, 1 year for biovit-40 and biovit -80.20 kg^{0}C

Summary
For many years, antibiotics have been used as conservatories of foreign microflora and food products in industrial production that stimulate the growth of agricultural animals and parrots, related to plant diseases and squealing processes. Their effective use in agriculture allows you to reduce the diseases and deaths of livestock and poultry, reducing the feed consumed by them by an average of 5-10%. The use of antibiotics in pig breeding allows you to grow an additional 100-120 pieces of meat per 1000 heads of pigs per year, from 1000 heads of chickens to 15 thousand eggs.

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