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ASSIMILATION OF CHROMIUM IN THE BODY OF RABBITS, DEPENDING ON ITS LEVEL IN THE MIXED FODDER

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The results of studies of the influence of feeding mixed fodder with different levels of Chromium on the balance of this element in the body of growing rabbits. Increasing the level of Chromium in the mixed fodder is from 0,8 to 1,2 mg/kg increases the content in the body of rabbits, respectively by 2,2 and 2,3 times, and the amount of withheld amounts of Chromium in the body to the received – respectively 1,9 and 1,3 %.

Rabbits, body *weight, growth, balance, Chromium, mixed fodder.*

During the recent years researchers detected increasingly interest and direct their scientific researches to establish the biological role of Chromium and its participation in metabolism as vital necessary microelements [1, 2, 5, 6, 7].

Metabolism in the body are changes that are occurring in the substance from receipt of the digestive channel output to the outside.

Chromium absorption occurs in the intestine, thus not assimilated Chromium excreted in the feces. Digested Chromium excreted mainly by the kidneys (80%) and, to a lesser extent, through the lungs, skin and intestines (about 19%) [3].

One should keep in mind that a small amount of said element can be released through through sweat and hair. Output rate and amount elements that was isolated, over time depends on the way revenues doses each specific properties of Chromium compounds, the strength of the connection last bioligands and duration of its effects on the body [4].

So, as a permanent component biostructure, Chromium has some features receipt, transformation, accumulation and excretion from the body.

The aim of the study was to study the effect of different levels of Chromium in mixed fodder to balance of this element in the body of growing rabbits.

Material and methods of research. Experimental research were carried out in conditions of problem research laboratory of feed additives National University of Life and Environmental Sciences of Ukraine.

For feeding studies according to the scheme were selected 60 rabbits age of 42 days from which on the principle of counterparts, according to age, sex, birth and body weight, formed 3 groups of 20 goals in each (10 males and 10 females). Experiments were carried out by groups.

Chromium content was 1.2 mg / kg mixed fodder. During the main period of the experiment Chromium levels in mixed fodder increased by an additional injection of 0.4 to 1.2 mg Chromium chloride per 1 kg mixed fodder according to the scheme of the experiment.

In terms of a scientific experiment was conducted physiological research installation assimilation of Chromium in the body of rabbits for which each group on the principle of analogues were selected by 4 head (2 males and 2 females) rabbits 78-day age. For the experiment, rabbits were placed individually in specially designed cages.

During the preparatory period of three days rabbits get used to changing conditions. In an experiment period of six days calculated daily amount consumed by each animal mixed fodder and allocated feces and urine. Feces were collected once a day - in the evening, urine - twice - in the morning and evening. After weighing feces preserved 10% solution of hydrochloric acid at the rate of 1.5 ml per 100 g of feces. Samples mixed fodder in were closing polyethylene packages. Before the zootechnical analysis of feces and urine samples were stored in the refrigerator in a tightly closed container.

The results of research. Data analysis balance of Chromium in the body indicates some differences in the assimilation of this element.

The highest number of assimilated Chromium observed in the fourth group of animals in which they were respectively 51.1% higher compared to the control group

of rabbits. Animals of the second and third groups received more Chromium compared with control respectively 27.5% and 43.0%, the smallest amount of Chromium received rabbits of control group.

Increase of Chromium in mixed fodders for rabbits fourth group was accompanied by increased release of feces. Thus, specified group animals on this indicator according to almost 2 times surpassed the analogues of control group. Accordingly, the rabbit second and third groups Chromium allocated by 38.0 and 75.6% higher than in control animals.

A similar trend was observed regarding the number of dedicated Chromium urine. The largest number that was highlighted was observed in the fourth group of animals. The smallest number of dedicated Chromium with urine marked in the first group of rabbits that consumed mixed fodder containing Chromium, which contained without adding.

The dependence between the level of Chromium in mixed fodder and the level of retention of Chromium assimilated in the body of rabbits, described by polynomial trend line and has the following form: $y = -0,4x^2 + 2,48x + 7,35$; $R^2 = 0,9481$.

Conclusions

1. The degree of assimilation of Chromium in the body depends on the content of rabbits in mixed fodder . Increasing the level of of Chromium in mixed fodder to 0.4 mg / kg accompanied by increased levels of assimilation in animal organisms by 55%, and the relation quantity to kept adopted - by 1.0%.

2. Increasing the level of Chromium in mixed fodder from 0.8 to 1.2 mg / kg increased the retention of Chromium in the body of rabbits respectively 2.2 and 2.3 times.

3. The calculated regression equation makes it possible to predict the level of content kept Chromium assimilated in the body to content in mixed fodder.

REFERENCES

1. Іскра. Р. Я. Біохімічні процеси в організмі тварин за дії різних сполук хрому: автореф. дис. на здобуття наук. ступеня доктора біол. наук.: спец. 03.00.04 «Біохімія» / Р. Я. Іскра – Львів, 2013. – 44 с.
2. Колещук О. І. Фізіолого-біохімічні процеси в організмі великої рогатої худоби за умов згодовування селену, Хрому, і вітаміну Е: автореф. дис. на здобуття наук. ступеня канд. с.-г. наук.: спец. 03.00.04 «Біохімія» / О. І. Колещук – Львів, 2011. – 20 с.
3. Макро- та мікроелементи (обмін, патологія та методи визначення): монографія / М. В. Погорєлов, В. І. Бумейстер, Г. Ф. Ткач, С. Д. Бончев, В. З. Сікора, Л. Ф. Суходуб, С. М. Данильченко, – Суми: Вид-во СумДУ, 2010. – 147 с.
4. Мамырбаев А. А. Токсикология Хрома и его соединений: Монография / А. А. Мамырбаев – Актобе, 2012. – 284 с.
5. Сологуб Л. І. Хром в організмі людини і тварин. Біохімічні, імунологічні та екологічні аспекти / Л. І. Сологуб, Г. Л. Антоняк, Н. О. Бабич. – Л.: Євросвіт, 2007. – 128 с.
6. Теоретическое и практическое обоснование использования Хрома в кормлении молодняка крупного рогатого скота / [А. Н. Федаев, В. А. Кокорев, Н. И. Гибалкина]. – Саранск: Мордов. кн. изд-во. – 2003. – 224 с.
7. Цепко Н. Л. Метаболічний профіль крові та стан імунної системи у поросят за різних доз Zn^{2+} і Cr^{3+} в раціоні: автореф. дис. на здобуття наук. ступеня канд. вет. наук.: спец. 03.00.04 “Біохімія” / Н. Л. Цепко – Львів, 2011. – 16 с.

ЗАСВОЄННЯ ХРОМУ В ОРГАНІЗМІ КРОЛІВ ЗАЛЕЖНО ВІД ЙОГО РІВНЯ У КОМБІКОРМІ

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Викладено результати досліджень впливу згодовування комбікорму з різним рівнем Хрому на баланс цього елемента в організмі молодняку кролів. Підвищення рівня Хрому у комбікормі від 0,8 до 1,2 мг/кг збільшує його утримання в організмі кролів відповідно у 2,2 та 2,3 рази, а відношення утриманої кількості Хрому в організмі до прийнятого – відповідно на 1,9 і 1,3 %.

Кролі, жива маса, ріст, баланс, Хром, комбікорм.

УСВОЕНИЕ ХРОМА В ОРГАНИЗМЕ КРОЛИКОВ В ЗАВИСИМОСТИ ОТ ЕГО УРОВНЯ В КОМБИКОРМЕ.

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Изложены результаты исследований влияния скармливания комбикорма с разным уровнем Хрома на баланс этого элемента в организме молодняка кроликов. Повышение уровня Хрома в комбикорме от 0,8 до 1,2 мг/кг увеличивает его содержание в организме кроликов соответственно в 2,2 и 2,3 раза, а отношение удержанного количества Хрома в организме к принятому – соответственно на 1,9 и 1,3 %.

Кролики, живая масса, рост, баланс, Хром, комбикорм.