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НА НАУЧНИТЕ ПУБЛИКАЦИИ
НА ДОЦ. Д-Р САШКА ИВАНОВА ЧОБАНОВА,

ПРЕДСТАВЕНИ ЗА УЧАСТИЕ В КОНКУРС ЗА ЗАЕМАНЕ НА
АКАДЕМИЧНА ДЛЪЖНОСТ „ПРОФЕСОР“ В ОБЛАСТ НА ВИСШЕ
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РЕЗЮМЕТА НА НАУЧНИ ТРУДОВЕ ПО ТОЧКА „В“

1. Semerdjiev, V., D. Yarkov, **S. Chobanova**, D. Girginov, K. Uzunova, 2008. Effect of the plant supplement Xtract upon egg-laying performance and egg hatchability in different breeds of chickens, Trakia Journal of Sciences, vol.6, No1, 26-29. ISSN 978-954-9329-36-0
http://tru.uni-sz.bg/tsj/Vol6N01_2008_supplement/Semerdjiev.pdf

ABSTRACT

White and Barred Plymouth Rock chickens, divided into three groups: group I - control, group II - fed diet supplemented with 0.01% Xtract and group III - supplemented with 0.02% Xtract, as well as layers from the Gy-ling and New Hampshire breeds divided into two groups: group I - control, group II - fed diet supplement with 0.01% Xtract, have been studied. It was found out the supplementation of the diet of White Plymouth Rock hens with 0.01% and 0.02% Xtract increased the egg-laying performance with 6.2% and 9.7%, that was important with regard to broiler production. In this breed, the egg hatchability percentage from fertilized eggs increased up to 98.21% when the diet was supplemented with 0.02% Xtract.

IN the other studied breeds, the egg-laying performance decreased. For egg hatchability, no dose-dependent alterations were established that was probably related to the productive type of investigated poultry breeds.

2. Georgieva, V., **S. Chobanova**, G. Ganchev, I. Manolov, D. Jarkov, M. Lalev, D. Stoianov, 2010. Effect of addition of multienzyme preparation VemoZyme®Plus on productive and slaughter parameters and meat composition of broiler chickens, fed wheat-corn-soybean meal diets, Agricultural Science and Technology, vol.2, 4. ISSN 1313-8820

<https://www.cabdirect.org/cabdirect/abstract/20113272127>

ABSTRACT

An experiment, lasting 42 days, was made to study the effect of addition of Bulgarian multienzyme complex VemoZyme®Plus on productive and slaughter performance and chemical meat composition of broiler chickens, fed wheat-corn-soybean meal based diets. In this trial 120 male one day old chickens of „Ross 308” hybrid, kept in battery cages, divided into 4 groups (distributed equally in three repetitions in each group) were used: 1. Positive control, fed with balanced diet; 2. Positive control with addition of 0.05 % VemoZyme® Plus. 3. Negative control, fed with diet, contains 5 % less metabolizable energy (ME) and digestible essential amino acids (DEAA)-lysine, methionine+cistine, treonine. 4. Negative control with

addition of 0.05% by VemoZyme®Plus. Tested enzyme preparation had no significant effect on the live weight, feed conversion, slaughter indices, protein and fat composition in the white meat of broiler chickens, fed with balanced diets. Addition of VemoZyme® Plus to the diets of diminished nutritive value, increases (compared to the same, without addition of VemoZyme® Plus) with 8,0 (P<0.05) and 5.7% (P<0.05) live weight, respectively through the grower and whole 42 days period, improved feed conversion with 11,0 (P<0,05) and 4.7%(P>0,05) respectively through the grower and the whole fattening period, has a positive (P<0,05) effect on grill weight (with 6,5%), without significantly affecting percentage of protein and fat in the white meat, compared with the control group.

3. Ilchev, A., G.Ganchev, S.Chobanova, D. Kanakov, P. Petkov, I. Nikiforov. 2010.Age-related changes in mineral retention and excretion in starter and finisher pigs fed diets with and without exogenous phytase. Agricultural Science and technology, vol.2, 4. ISSN 1313-8820 <https://www.cabdirect.org/cabdirect/abstract/20113272125>

ABSTRACT

Five balance feeding trials were performed to evaluate age-related changes in nitrogen, phosphorus and calcium utilization in growing and fattening male castrated DanBred hybrid pigs. Two commercial phytase preparations were used: Optiphos and Natuphos at a dose of 0.01%. It was found out that with age, the amount of dietary nitrogen intake and nitrogen output in urine increased statistically significantly (P<0,05).The total nitrogen output was also higher. The retention of nitrogen decreased substantially with age. The supplementation of rations with phytase did not alter this tendency. Phytase added to feed improved phosphorus absorption by 28-34% and reduced its total output by 38-45%. The digestibility of calcium in pigs decreased with age, whereas its output in faeces became higher. There was no statistically significant difference between the effects of Optiphos and Natuphos.

4. Георгиева В., С. Чобанова, Д. Алексиева, И. Манолов, В.Герзилов, Д.Стоянов, 2011. Проучване ефекта от храненето с комбинирани фуражи с различно участие на царевичен шрот върху продуктивните и кланични показатели на пилета бройлери, Животновъдни науки, XLVIII, 3, 26-33. ISSN 2534-9856

SUMMARY

A 42-day experiment was carried out to evaluate the effect of feeding compound feed with different content of corn meal on productive and slaughter traits of Ross 308 hybrid broiler chickens. For this purpose. 120 one-day old male chickens reared in batteries, divided in 4 equal groups (one control and three experimental) with 3 repetitions per group. All chickens received balanced isocaloric and isoprotein rations. The main protein source in controls was soybean meal, and experimental groups I, II and III were fed a different amount of corn meal - 15, 20 and 25 %, respectively.The inclusion of 20 and 25% corn meal in compound feeds up to 28 days of age reduced statistically significantly the live body weight of chickens compared to controls. BY the age of 42 days, chickens from group I (15% corn meal) and II (20% corn meal) succeeded to compensate for the stunted growth vs controls (2562 g) attaining live body weights of 2468 g and 2423 g respectively (P>0.05), whereas those of group III which received a diet with highest corn meal share (25%) exhibited a significantly lower body weight by 12.4%. Over the 42-day finishing period, controls and chickens fed 15% corn meal were with equal feed conversion (1.682 and 1.699 kg feed/kg weight gain), whereas groups that received rations with 20 and 25% corn meal, were with higher feed conversion - by 4.4 and 8.0% respectively, vs controls. The inclusion of 15, 20 and 25% corn meal in poultry feeds reduced the grill weight (P<0.05) as compared to control group. Only the group receiving a feed with the highest corn meal proportion (25%) showed a lower breast weight (P<0.05), whereas leg weights were considerably lower in groups fed compound feeds

containing 20 and 25% corn meal. There were no significant differences among groups with regard to chemical composition of meat (water, protein and fat contents).

5. Georgieva, V., S. Chobanova, N. Todorov, D. Pavlov, 2014. Effect of dietary crude fiber on endogenous dry matter and nitrogen excretion in cockerels. Bulgarian Journal of Agricultural Science, vol.20, 4, 903-908. ISSN 1310-0351 <http://www.agrojournal.org/20/04-27.pdf>

ABSTRACT

The experiments were carried out with 10 cecectomised cockerels for each diet. They are force fed by method of Sibbald (1986) with nitrogen free diets of pure nutrients and with sunflower meal with different crude fiber and crude protein content. The endogenous excretion of nitrogen was established by quantity excreted when cockerels are kept without feeds (fasting), by extrapolation (regression) of excretion when fed nitrogen free diet with different level of cellulose, by feeding nitrogen free diet, and extrapolation (regression) when cockerels are fed sunflower meal with different protein and crude fiber content. The endogenous nitrogen was 1.69, 1.73, 1.78, and 1.80 g respectively. The differences between data obtained by different methods are not significant ($P > 0.05$). There are tendency for increasing endogenous nitrogen excretion with increasing pure cellulose or crude fiber in diets. Endogenous dry matter excretion was 8.00 g in fasting cockerels, 9.26 g by extrapolation nitrogen free diets with different cellulose level, and 9.61 g by extrapolation diets with sunflower meal (SFM) with different crude protein, and crude fiber content. Differences between different methods are not significant ($P > 0.05$). Although there is some impact of type of fiber, differences are small. However, the results with fasting bid tend to be lower. Part of the observed small difference was probably due to the incomplete digest ibility of dietary mineral supplements in diets with pure nutrients and in SFM, and partly on increased secretions and raw (desquamation) of epithelial cells, which are not reabsorbed completely. Therefore, level of insoluble feed fiber in diet is not expected to be serious obstruction to establish basic value for endogenous nitrogen excretion in practical diet with normal fiber content.

6. Chobanova, S., I. Penchev, A. Atanasoff, S. Ribarski, N. Karkelanov, 2019. Chemical composition, technological and organoleptic characteristics of meat from chicken broilers, fed with supplement of rose petal meal, Bulgarian Journal of Agricultural Science, 25 (Suppl. 3), 81-84. Scopus SJR 2019 -0.191 ISSN 1310-0351 <http://agrojournal.org/25/03s-13.pdf>

ABSTRACT

Many evidences have been accumulated about the positive influence of rose oil and rose petal meal, as well as their antioxidant, antimicrobial, anti-inflammatory, spasmolytic and other beneficial effects on health. The aim of this study to evaluate the efficiency of the rose petal meal, as one of the ingredients in pelleted feed for chickens ROSS 308 on the chemical composition, meat quality and organoleptic characteristics. A total of 60 male one-day old broilers (ROSS 308) were allocated in three dietary groups: in control group broilers received standard broiler feed (C), the first experimental group (RPM25) which were fed a standard feed supplemented with 0.25% rose petal meal (Herbacon, Gellschaft m.b.H., Germany) and second (RPM50) with 0.50% rose petal meal. Broilers were slaughtered and samples were taken from *Musculus pectoralis superficialis*. There no significant effect on the proximate composition, only the lipid and ash contents of breast muscle of broiler chickens from RPM 50 was lower than control group. The results of technological quality showed meat from control group had a lower a^* and b^* , compared with that from RPM50 broilers. No significant difference was found in organoleptic attributes, but according of degustators the flavour, juiciness and tenderness were more pronounced in RPM50 fed broilers than in control group.

Including of the rose petal meal in pelleted feed, influenced of broiler meat and they had higher ratings in organoleptic characteristics.

7. Pamukova, D., N. Rusenova, T. Kolev, **S. Chobanova**, N. Naydenova, 2020. Physicochemical and microbiological characteristics of goat milk from animals grown in a mountainous area in Bulgaria. *Agricultural science and technology*, vol. 12, 3, 277-281. ISSN 1313-8820 https://agriscitech.eu/wp-content/uploads/2020/09/Contents_AST_3_September_2020.pdf

ABSTRACT

The aim of the study was to determine the goat milk quality from animals grown in a mountainous area in Bulgaria based on physicochemical and microbiological parameters. The study was carried out in a farm that breeds local goats and goats of the Bulgarian White Dairy Goat (BWD). Individual milk samples were taken on a monthly basis from morning milking. A total of 100 individual and 10 bulk milk samples were examined for fat, solids non fat, protein and density. A total of 62 samples were collected at a time to determine the microbiological characteristics of milk. For the period May-September 2017, the percentage of fat in the milk of local goats averaged 3.61% and of goats from BWD goat - 3.54%. The solids non fat were 8.27% and 8.19%, total protein - 3.13% and 3.10%, and the dry matter - 11.89% and 11.74%, respectively. For the period May-August 2017 the individual constituents of milk changed to varying degrees with the most variable being milk fat (decrease of 0.97% in local goats' milk and 1.09% in milk from BWD goat) followed by solids non fat (0.56% and 0.7%, respectively). The slightest change was in protein - 0.21% and 0.26%, respectively. Coagulase-negative staphylococci were the predominant bacterial species in the goats' milk samples.

8. Denev, S., L.Sotirov, **S. Chobanova**, Ts. Koynarski, V.Ivanov, N. Bozakova, S. Stoev, 2020. Effect of silymarin and ochratoxin A on humoral natural immunity of broiler chickens, *Journal of Central European Agriculture*, 21(3), p.492-498 ISSN 1332-9049 <https://hrcak.srce.hr/244296>

ABSTRACT

The aim of this work was to investigate the effect of Ochratoxin A (OTA) and Silymarin on serum lysozyme concentrations, complement and betalysin activity in broiler chickens. In this experiment 144 one-day-old Ross 308 male broiler chicks were used. All chicks were divided in four groups of 36 birds each: Group 1: Basal diet (BD) with no supplementation of Ochratoxin A (OTA) and Silymarin; Group 2: BD with 1.0% Silymarin; Group 3: BD with 3.0 mg/kg OTA; Group 4: BD with 3.0 mg/kg OTA plus 1.0% Silymarin. It was found that lysozyme concentration in the 2nd group there is a significant difference to groups 3 and 4. The immunosuppressive effect of Ochratoxin A is underlined but no protective effect of Silymarin in the group 4 was found. The alternative pathway of complement activation (APCA) is affected in the group 4. Betalysine there is a significant decreasing in the group 3 but slightly increasing of Betalysine in 4th group. Based on these results it can be concluded that OTA there is an immunosuppressive effect on the studied traits and there is a positive effect of Silymarin only on serum betalysine.

9. Karkelanov, N., **S. Chobanova**, I.M. Whiting, K. Dimitrova, S.P. Rose, V. Pirgozliev, 2021. Pelleting increases the metabolizable energy of de-hulled sunflower seed meal for broilers, *South African Journal of Animal Science*, 51, 3, 290-295. SJR 0.341 http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S0375-15892021000300002

ABSTRACT

The study examined the effects of two methods of processing de-hulled sunflower seed meal (SFM) from the same batch of sunflower seeds. Sunflower seed meal was fed to broilers as meal (MSFM) or after it had been pelleted (PSFM) at 75 °C and 360 kPa pressure to pass through a 3 mm mesh. Three diets were prepared, namely a balancer feed (BF) and two diets containing 200 g/kg MSFM or 200 g/kg PSFM. They were fed to 30 pens (two birds each) with male Ross 308 broilers, from 8 to 21 days old, following randomization. Data were analysed by ANOVA. Two pre-planned orthogonal contrast tests were performed to compare overall differences between the diets containing SFM and BF and between diets containing the MSFM and PSFM. The BF had a very different nutrient composition from the complete feeds containing SFM so, as expected, there were differences in growth performance and nutrient retention. The diet containing PSFM had greater apparent metabolizable energy corrected for N retention (AMEn) and dry matter retention (DMR) than that containing MSFM. The use of the substitution method showed the PSFM had AMEn that was 18% greater than the MSFM (8.79 vs 7.47 MJ/kg DM). Under the conditions of the current study, incorporating PSFM in a mash broiler feed increased dietary AMEn compared with the same feed containing MSFM. Further studies are needed to identify whether the benefits of pre-pelleting SFM remain after this product has been incorporated in complete pelleted broiler feeds.

10. Stoev, S., K. Dimitrov, I. Zarkov, T. Mircheva, D. Zapryanova, I. Valchev, S. Denev, S. Chobanova, M. Stefanov, R. Arora, 2021. "Some Indian herbs having protective effects against deleterious effects of ochratoxin A in broiler chicks". World Mycotoxin Journal, 0, 2019, 14, 1, 525-538. IF -2.31 <https://doi.org/10.3920/WMJ2020.2657>

ABSTRACT

A protective effect of herbs *Glycyrrhiza glabra* and *Tinospora cordifolia* given as feed additives was observed against the growth inhibitory effect of ochratoxin A (OTA) and associated immunosuppression and biochemical or pathomorphological changes. The feed levels of 3 ppm OTA and fine powder of one of the both herbs were given during a period of 32 days to female broiler chicks divided into 3 experimental and 1 control groups (14 chicks per group). The observed pathological and biochemical changes, the changes in relative organs' weight and body weight, and the decrease of antibody titer against Newcastle disease were more pronounced in the OTA-treated chicks without herbs supplementation, but the same were less pronounced in the chicks treated additionally with *Glycyrrhiza glabra* or *Tinospora cordifolia* as can be seen from the better feed performance and the higher body weight in the chicks treated with the both herbs. The higher relative weight of lymphoid organs of the chicks supplemented with both herbs revealed their beneficial effects on the immune system. The hepatoprotective effect of both herbs was evident, being stronger in the chicks additionally supplemented with *Glycyrrhiza glabra* as it can be seen from the pathomorphological findings and from the lower levels of AST (131,1 U/L) compared to chicks given only OTA (156,0 U/L). A protective effect of *Tinospora cordifolia* on the bone marrow and kidneys was found as it can be seen from the lower levels of uric acid (382,9 µmol/L) compared to chicks given only OTA (466,9 µmol/L)

РЕЗЮМЕТА НА НАУЧНИ ТРУДОВЕ ПО ТОЧКА „Г-7“

1. Георгиева В., С. Чобанова, Г. Ганчев, Д. Димитров, 2008. Ефект от добавката на фитаза към пшенично-соеви дажби с различно съдържание на нефитинов фосфор върху продуктивността, оползотворяването на протеина, фосфора и калция, пепелното съдържание и хистологичното състояние на тибията при бройлери в ранна възраст, Животновъдни науки, XLV, 5, 45-54. ISSN 2534-9856

SUMMARY

An 11-day experiment with 200 one-day old male broiler chickens (Ross 308), divided into 5 groups (each one repeated 4 times), was performed in order to determine the effect of phytase supplementation as Ronozymc P at 1000 PU/kg to wheat-soybean diets with a different nonphytate phosphorus (nPP) content from 0.45% to 0.30%, on the productivity, protein, phosphorus and calcium utilization, tibia ash content and tibia histological structure in broiler chickens. The chickens from the control group were fed on a diet with 0.45% nPP but without phytase supplementation. The results of the experiment showed that the live body weight and feed conversion ratio in the 11-day-old broiler chickens fed on wheat-soybean diets supplemented with phytase but with different nPP level (0.45- 0.30%), did not differ significantly from the respective indices in the broilers fed on a non-supplemented diet at a normal (0.45%) nPP level. The effect of phytase supplementation was the strongest positive and statistically significant vs. the other groups with regard to protein and phosphorus (P) utilization in the diets with the lowest nPP level (0.30%) and to calcium (Ca) in the diets with 0.35% and 0.30% nPP. The phytase supplementation of wheat-soybean diets containing 0.40 % and 0.35% nPP improved the tibia ash content and the proportion of P in it compared to those in the control chickens. The light microscopy of histological preparations from all 5 experimental groups showed that the general histological structure of bones was preserved in all chickens. The microstructural changes in the tibias of chickens from groups TV and V showed that there were initial structural changes in diaphyseal compacta evidencing an active calcium-phosphorus remodeling.

2. Пиргозлиев, В., Т. Акамович, М. Бедфорд, **С.Чобанова**, 2009. Влияние на бактериалната фитаза върху усвоимостта на органичния фосфор в смеските и продуктивността на пилета бройлери, Животновъдни науки, XLVI,1,51-54. ISSN 2534-9856

SUMMARY

The objectives of this experiment were to determine the effect of dietary phytase Quantum™ on the metabolisable energy, phytate P digestibility coefficients, and growth performance of broiler chickens reared in cages between 10 and 17 d of age. The birds fed with phytase supplemented diets performed better but no changes in the dietary AME were detected. However, using a high dosage of phytase improved the digestibility of phytate P, suggesting that supplementation of poultry feed with Quantum™ would not only bring about good performance, but would also reduce the environmental pollution with phosphorus.

3. Alexieva D., **S.Chobanova**, 2009. Investigations on the content of lead and cadmium in compound feed additives, Agricultural Science and technology, 1,4, 133-136. ISSN 1313-8820 <https://www.cabdirect.org/cabdirect/abstract/20113272083>

ABSTRACT

The lead and cadmium content of samples from the most commonly utilized feed additives (limestone, dicalcium phosphate, sodium chloride, zinc, vitamin and trace element premixes) was analyzed by means of atomic absorption spectrophotometry. It was found out that up to 30% of the allowed limit for lead content and up to 100% of the allowed limit of cadmium content in compound feed for layer hens could be attributed to limestone, therefore emphasizing the importance of monitoring lead content of this ingredient. Additives such as dicalcium phosphate, trace element mixes, vitamin premixes and particularly sodium chloride, could also contribute to the higher lead and cadmium content in compound feed. As these ingredients are included at quite low levels, the risks for increasing lead and cadmium content of compound poultry feed through them is assessed as insignificant.

4. Slavov, T., V.Radev, S.Tchobanova, 2012. Effects of dietary palm oil supplementation on some ruminal fermentation parameters and weight development of yearling sheep, *Agricultural Science and Technology*, vol.4, 4. 365-367 ISSN 1313-8820 http://agriscitech.eu/wp-content/uploads/2014/05/03-NP_01.pdf

ABSTRACT

An experiment was conducted with 24 Pleven Blackhead yearling sheep in the experimental base of the Animal Physiology Unit, Faculty of Agriculture to Trakia University-Stara Zagora. The animals' average weight at the beginning was 28.8 kg. The fattening period lasted 80 days, and sheep were weighed at 15-day intervals. Ruminal content samples were obtained post mortem. Sheep were divided into four groups of 6 animals each - one control and three experimental. The ration of the control group consisted of 800 g barley and 800 g meadow hay. The rations of experimental groups were supplemented with 20 g palm oil per 1 kg concentrate. The first experimental group received 800 g barley and 800 g meadow hay. The second experimental group was fed 800 g concentrate (barley and sunflower meal at a ratio of 1 kg barley and 200 g sunflower meal) plus 800 g meadow hay. The third experimental group was offered 800 g meadow hay and 800 g concentrate (consisting of 1 kg barley and 200 g sunflower expeller). The following parameters were determined: total infusorian counts, total volatile fatty acids content, ammonia concentrations and the body weight of animals. The effects of dietary palm oil supplementation in yearling sheep were analyzed. After addition of palm oil to the rations of the second experimental group, the total infusorian counts decreased statistically significant vs control and group I / $p < 0.001$ /. In experimental group III, the palm oil supplementation resulted in total infusorian counts compared to each of other three groups / $p < 0.001$ /. Palm oil improved significantly the daily weight gain in the third experimental group compared to control sheep / $p < 0.05$ /.

5. Chobanova, S., 2019. Effects of compound poultry feed with different content of high-protein sunflower meal on growth performance of broiler chickens, *Bulgarian Journal of Agricultural Science*, 25 (Suppl. 3), 91-94. Scopus SJR 2019 -0.191 ISSN 1310-0351 <https://www.agrojournal.org/25/03s-15.pdf>

ABSTRACT

Ефекти от комбинирани фуражи за домашни птици с различно съдържание на високопротеинов слънчогледов шрот върху растежните показатели на пилета бройлери. Целта на настоящия експеримент беше да се оцени ефектът от храненето на комбиниран фураж за домашни птици с различни нива на високопротеинов слънчогледов шрот върху растежните показатели на пилетата бройлери. Опитът е проведен с 3 групи пилета (30 птици в група) – една контролна и две опитни. Храненето с изокалорични и изопротеинови диети, съдържащи брашно от слънчогледов шрот – 10% за втората група и 15% за третата група през трите периода на растеж, има неблагоприятен ефект върху растежните показатели: в края на периода на завършване намалението на живото тегло е съответно с 1,6% и 4,1% за втората и третата група. Приемът на фураж за 1 kg наддаване на тегло се увеличава с 2,7% и 4,2% в опитните групи. Може да се предположи, че по-лошите производствени характеристики в резултат на повишения дял на нискоцелулозно високопротеиновото слънчогледово брашно в диетите се дължат на по-ниския прием на фураж, свързан с прекалено фините частици на брашното – 150-300 μm . Оптималният размер на частиците в комбинирания фураж за домашни птици на основата на царевица или сорго, предпочитан от пилета бройлери, е от 600 до 900 μm .

6. Kyrkelanov, N., **S.Chobanova**, A.Atanasoff, 2020. Investigation of possible use of compound feeds with different level of high-protein sunflower meal in broiler chickens nutrition, Bulgarian Journal of Agricultural Science, 26 (Suppl. 1), 121-125. SJR (2019) – 0.207 ISSN 1310-0351 <https://www.agrojournal.org/26/01s-14.pdf>

ABSTRACT

The aim of the present study was to evaluate the possibility for using compound feeds with various levels of high- protein sunflower oil and its effect on main productive traits of broiler chickens. The experiment was carried out in the Experimental Base of the Faculty of Agriculture with 4 groups Ross 308 broiler chickens (30 birds in group, one control and 3 experimental). On the basis of chemical analysis of feed ingredients, isocaloric and isoprotein rations were formulated according to hybrid's requirements. The protein component of control ration was based on soybean meal as the only source of dietary protein. The birds from experimental groups were fed as follows: group I - compound feed with 5, 8 and 12% pelleted high-protein sunflower oil during the starter, grower and finisher periods, respectively; group II - as the Ist group, but with higher level of high-protein sunflower oil - 15, 20 and 22%, respectively; group III - high-protein sunflower oil was the only protein feed (32.95%, 28.55% and 26.50%), respectively. The replacement of soybean meal with pelleted high- protein sunflower oil in the isocaloric/isoprotein diet of broiler chickens resulted in reduction of body weight, most pronounced in experimental group III.

7. Penkov, D., **S. Chobanova**, 2020. Metabolizable energy and true digestibility of the protein of extruded of bakery by - products (bread wastes) in balanced experiments with poultry, Journal of Central European Agriculture, 21(3), p.517-521 ISSN 1332-9049 <https://jcea.agr.hr/en/issues/article/2658>

ABSTRACT

Using methods for balance experiments, the apparent (AMEn), the true (TMEn) metabolizable energy (0-n balance corrected) and the coefficient of true digestibility of the nitrogen/protein (CTDP) of extruded bread wastes have been studied. The chemical composition of the dry matter of the fodder was, as follow (in %): crude protein – 12.28; crude fats – 1.34; crude fiber – 2.28; NPE – 80.1. The following energy/protein levels in the DM have been established: (AMEn –14.17 MJ/kg; TMEn – 15.37 MJ/kg; CTDP - 84.15. The established nutritional values are similar to those of wheat, both fodders can be replaced each other in the production of compound feed for poultry.

8. **Chobanova, S.**, D. Penkov, 2021. Influence of soybean meal replacement with high-protein sunflower meal on “Clarcs of energy distribution/protein transformation” in broiler chickens. Agricultural science and technology, 13, 3, 255-259.

ABSTRACT

The aim of the study is to compare the net utilization of energy and protein in the eco-technical chain „feed-meat“ when replacing part of the soybean meal with high-protein sunflower meal in broiler fattening. One control and 3 experimental groups, 4-phases fattening with isoenergetic and isoprotein combined fodders. Main protein source in the fodders for the control group is soybean meal. Replacement with sunflower meal: First experimental group: Starter - 5%, Grower - 8%, Finisher 1 - 10% and Finisher 2 - 10%; Second experimental group: 15, 18, 25 and 25%, respectively; Third experimental group: 34.25, 27.27, 27.27 and 26%, respectively. Clarcs of energy distribution/protein transformation (CED/ CPT) are the ratio between accumulated gross energy/crude protein in breast and thigh muscles and consumed metabolic energy/crude protein throughout life. The following results were established: CED “fodder – breast+thigh muscles”: Control - 0.2430,

first experimental group - 0.2394, second experimental group - 0.2505, third experimental group - 0.2334; CPT - 0.6080, 0.5050, 0.5280 and 0.5490, respectively.

9. Chobanova, S., D. Penkov, 2021. True digestibility of the essential amino acids of high-protein sunflower meals by balanced experiments with intact and caecectomized birds from Gallus species, *Agricultural science and technology*, 4, 378-381. https://agriscitech.eu/wp-content/uploads/2021/12/9_AST_4_December_2021.pdf

ABSTRACT

Using adapted methods for balanced experiments with poultry, the true digestibility coefficients of the essential amino acids of two high protein sunflower meals - 40+® and 47s have been established. The true digestibility coefficients by using two methods - with intact and randomized (caecectomized) birds have been compared. Six birds were tube fed and six - feed deprived for both of the fodders. The amino acids were established with amino analyzer AAA-881 after preliminary HCl hydrolysis. The mean digestibility of sunflower meal 40+® is higher in intact (88.11 versus 85.73 of sunflower meal 47®) compared to randomized birds (87.20 versus 85.46 of sunflower meal 47®). The differences by lots are statistically significant only in intact birds. The authors recommend for practical needs to use the average true digestibility coefficients between both meals, established with randomized birds (ileal digestibility).

10. Stoev, S., T. Mircheva, S. Denev, S.Chobanova, V. Ivanov, 2021. The protective effect of Silymarin against ochratoxin A induced histopathological and biochemical changes in chicks", *Journal of Advanced Veterinary Research*, vol.1, 1, 1-8. ISSN (Print): 2090-6269 ISSN (Online): 2090-6277, SJR 2019 - 0,11 <https://www.advetresearch.com/index.php/AVR/article/view/598>

ABSTRACT

Protective effects of herbal feed additive Silymarin against the deleterious toxic effects of ochratoxin A (OTA) on internal organs and blood biochemistry was seen. The observed histopathological and biochemical changes were well expressed in OTA-exposed chicks without Silymarin supplementation, followed by chicks treated supplementary with Silymarin in addition to OTA treatment, whereas no pathological changes were seen in the control chicks or the chicks treated with Silymarin only. The observed increase in the serum levels of uric acid, glucose and the enzyme activities of AST and ALT in OTA treated chicks and the found decrease of the same biochemical indices in the chicks protected by Silymarin in addition to OTA treatment also supported the protective effects of this herbal additive on the kidneys and liver. The same herbal substance Silymarin could be used as a practical approach for safely utilizing of OTA-contaminated feed.

11. Sotirov, L., S. Denev, S. Chobanova, N. Bozakova, K. Velichkova, T. Dinev, Ts. Koinarski, 2021. Effects of dietary marine microalgae *Schizochytrium limacinum* on natural humoral immunity of broiler chickens, *Bulgarian Journal of Agricultural Science*, 27, 1, 194–199. <https://agrojournal.org/27>

ABSTRACT

The aim of the study was to evaluate the effect of dehydrated whole cell dietary marine microalgae *Schizochytrium limacinum* on natural humoral immunity of broiler chickens, including serum lysozyme concentrations, alternative pathway of complement activation, beta (p) lysine, alfa (IFN-a) and gamma (IFN-y) interferons. The first completely randomised experimental design included 90 (ninety) and the second - 120 (one hundred twenty) one day-old Ross 308 male broiler chickens that were obtained from a local commercial hatchery. Upon arrival, all chickens were individually weighted, wing-banded, and assigned randomly

in three (Experiment 1) and fourth (Experiment 2) groups respectively, with three subgroups (replicates) of thirty birds each. They were housed in separate pens into wire type experimental cages that were placed in an environmentally controlled experimental poultry house. All experimental basal diets were formulated to meet or exceed broiler chick's nutritional requirements. The microalgae used in this study was a dehydrated, whole-cell *Schizochytrium limacinum* CCAP 4087/2, as a source of highly unsaturated fatty acids (DHA and EPA), supplemented with low and moderate doses. Water and feed were provided ad libitum throughout the experiments. The trials were terminated when the broiler chickens were 42 day of age. On the base of obtained results we can conclude that marine microalgae *Schizochytrium limacinum*, supplemented with low and moderate dietary doses, don't alter immune functions of tested indices in broiler chickens and even increase them after six weeks of treatment.

12. Чобанова, С., Д. Пенков, 2022. Видима и истинска обменна енергия на нелющен и частично лющен слънчогледов шрот при балансови опити с петли, Животновъдни науки, 59, 3, 40-45. https://animalscience-bg.org/page/bg/details.php?article_id=743

РЕЗЮМЕ

С помощта на стандартизирана методика за балансови опити с птици е установена видимата (ВОЕп-о) и истинската (ИОЕп-о) азот коригирана обменна енергия на 2 партиди слънчогледов шрот – високоцелулозен (35% СП в СВ) и частично лющен (40% СП в СВ). Опитите са проведени поотделно с интактни и с цекоектомирани петли. Установени са следните стойности (J/g СВ): високоцелулозен шрот: ВОЕп-о: интактни: 6654, цекоектомирани: 4915, средно: 5785; (ИОЕп-о): интактни: 7911, цекоектомирани: 6153, средно: 7032. За частично лющения фураж данните са съответно: 7548, 7993 и средно: 7771 и 8781, 9093, 8937 J/g СВ.

13. Penchev, I. G., S. Chobanova, N.Karkelanov, 2022. Effect of different levels of high-protein sunflower meal in compound feeds for broiler chickens on carcass characteristics and meat quality, Bulgarian Journal of Agricultural Science, 28 (No 2) 2022, 343–348. https://journal.agrojournal.org/page/en/details.php?article_id=3757

ABSTRACT

The aim of the present study was to evaluate the effect of inclusion of various dietary levels of high-protein sunflower meal (HiSFM) in compound feed for broiler chickens on their carcass characteristics and meat quality. The experiment was conducted with four groups (one control; three experimental), each with 6 128 unsexed day-old Cobb 500 broiler chickens. In the diet of experimental groups, soybean meal (SBM) was replaced with three different levels of HiSFM and in the diet of 3rd experimental group, it replaced entirely the SBM. The chickens were slaughtered at 42 days of age. As carcass characteristics were concerned, no significant differences among the four groups were established, except for “grill” weight which was the highest in control group ($p \leq 0.05$). The substitution of SBM with HiSFM had a negative effect on meat protein content, which was higher in control group than in experimental ones ($p \leq 0.001$). Among meat technological properties, value of pH was lower while water holding capacity (WHC) – better in control group. The consumer panel gave the highest organoleptic score to the second experimental group, whose diet was characterized with a medium level of SBM replacement with HiSFM.

14. Chobanova, S., D. Penkov, 2022. Apparend and true metabolizable energy of high protein sunflower meal in balance experiments with roosters, Trakia Journal of Sciences, 1, 31-35. <http://tru.uni->

ABSTRACT

Aim: To establish the zero nitrogen corrected apparent (AMEn-o) and the true (TMEn-o) metabolizable energy of two batches high-protein (dehulled, with 45 and 50% crude protein in DM) sunflower meal. **Material and Methods:** Standardized methods for balance experiments with poultry. The roosters were 1 year old – White Plymouth Rock – race. Six birds were tube fed and six feed deprived per each batch of fodder. Separately experiments with intact and caecoectomized roosters were conducted. **Results:** The following levels (J/g DM) have been established: Batch 45%: (AMEn-o): intact: 8430, caecoectomized: 8317, mean: 8373; (TMEn-o): intact: 9221, caecoectomized: 9108, mean: 9164. For the batch 50% the results were: 9281, 10061, mean - 96711 and 9943, 10973, mean - 10458 J/g DM respectively. **Conclusion:** The authors suggest that both feed batches can replace isoenergetic soybean meal in combined foddors for poultry.

РЕЗЮМЕТА НА НАУЧНИ ТРУДОВЕ ПО ТОЧКА „Г-8“

1. Саров Г., С.Чобанова, 2005. Промени в храносмилането и инсулиновата сензитивност след захарозното обременяване при новозеландски бели зайци (първо съобщение), Животновъдни науки, XLII, 5, 183-186. ISSN 2534-9856

SUMMARY

The object of this study was to find how 10% sucrose in tap water influences digestion and insulin sensitivity in New Zealand White (NZW) rabbits. Two groups of male NZW rabbits received different diets for 40 days: control (n=8; fed with standard rabbits chow and having free access to tap water) and experimental (n=8; fed with standard rabbits chow and having free access to 10% sucrose solution). At the end of the diet period we measured digestion, serum glucose, insulin and total cholesterol and found that sucrose treated animals increased significantly their body weight, decreased significantly their food digestion, but the total calorie input remained not significantly changed. We concluded that drinking of 10% sucrose solution could impair nutrition and increase body weight but do not induce insulin resistance, probably because of appetite suppression and unimpaired calorie balance.

2. Саров Г., С. Чобанова, П. Атанасова, П.Георгиев, 2005. Промени в храносмилането и метаболизма след захарозното обременяване при новозеландски бели зайци (второ съобщение), Животновъдни науки, XLII, 5, 187-191. ISSN 2534-9856

SUMMARY

The object of this study was to find how 4 months prolonged sucrose feeding influences digestion and metabolism in New Zealand White (NZW) rabbits. Two groups of male NZW rabbits received different diet for 120 days: control (n=6; fed with standard rabbits chow and having free access to tap water) and experimental (n=6: fed with standard rabbits chow and having free access to 10% sucrose solution). At the end of the diet period we performed intravenous glucose tolerance test (IVGTT) measured of the weights of body, liver and fat pads, digestion, blood lipids and glycohemoglobin. We found that sucrose treated animals increased significantly the weights of their liver and fat-pads and glycohemoglobin without significant changes in body weights, glucose and insulin levels, digested nutrients, and calorie input. We concluded that the animals became adapted to drinking of 10% sucrose solution as it concerns digestion, weight gain, and insulin sensitivity but developed some risky tendencies as increased visceral fat, glycohemoglobin and decreased HDL. We suppose that permanent drinking of soft drinks could be atherogenic.

3. Пиргозчиев, В., Т. Акамович, М. Бедфорд, **С.Чобанова**, 2008. Влияние на бактериалната фитаза върху обменната енергия и продуктивността на пилета бройлери, Научна конференция с международно участие, СУБ Стара Загора, 5-6 юни, CD-формат ISBN 978-954-9329-44-5

ABSTRACT

The objectives of this experiment were first, to determine the effect of bacterial phytase Quantum™ on the concentrations of available energy in poultry feed using two different assays, e.g. excreta based values and ileal digesta based values of apparent metabolisable energy of the same experimental diets. Bird performance was also determined. As expected, birds fed phytase supplemented diets performed better. However, no changes in dietary AME were detected. The AME values determined in two different ways did not relate to the bird performance. The results from this study suggest that the use of feed evaluating systems accounting for the intermediate metabolism might improve the prediction of feeding quality of the diets in the poultry industry.

4. Илчев, А., Г.Ганчев, Д.Павлов, **С.Чобанова**, 2008. Проучване на ефекта от различни равнища на протеин в дажбите върху ретенцията и екскрецията на азот при прасета през гроуерния период на отглеждане, Научна конференция с международно участие, СУБ Стара Загора, 5-6 юни, CD-формат ISBN 978-954-9329-44-5

ABSTRACT

The experiment was performed on 9 young pigs (Danbred). Nitrogen balance were determined by the simple balance method. The pigs, divided into three groups (three head each), were kept and fed individually. They received complete diets. The control diet contained level of protein according with the norm of Danbred hybrids. In the experimental diets a level of protein was increased with 15 % for second group and decrease with 15 % for third group. The increase level of protein with 15 % has not effect on average daily gain and feed efficiency. The high levels of protein in complete diets increase the water consumption and quantity of excreted urine. With urine excreted from 38,8 to 47,7 % of intake with diets nitrogen. With fecal excreted from 14,6 to 16,0 % of intake with diets nitrogen. Increases of quantity of nitrogen intakes decrease nitrogen excretion. Necessary specifying the norms for crude protein for finisher period for "Danbred" hybrids.

5. Бозакова, Н., К.Стоянчев, И.Йотова, **С.Чобанова**, 2008. Продуктивни показатели на мюлари при провокиране и лечение на мускулна дистрофия в условията на екологичен комфорт, Научна конференция с международно участие, СУБ Стара Загора, 5-6 юни, CD-формат ISBN 978-954-9329-44-5

ABSTRACT

The muscular dystrophy exerts really negative influence of the poultry productivity. The aim of the present study was to follow the body weight and forage expenditure per 1 kg weight gain of Mule ducks after provoking and treatment of muscular dystrophy. An evaluation of poultry welfare in Mule ducks with muscular dystrophy on the basis of the productivity is as far unknown to us. The study was performed on 42 Mule ducks, reared under comfortable microclimatic conditions. The birds were divided into two groups: group I, (control group) and group II - birds with alimentary provoked muscular dystrophy. The rearing period lasted from the age of 1 to 70 days. At the end of experiment a lower average, body weight was observed in experimental ducks ($P < 0.01$) as well as the forage expenditure per 1 kg weight gain was higher ($P < 0.05$) than in control ducks.

6. Alexieva D., **S. Chobanova**, 2009. Проучване ефекта на оризовата арпа като компонент на комбинираните за пилета бройлери. Международна научна конференция на СУБ, Стара Загора, том II, ISBN 978-954-9329-45-2.

SUMMARY

The effect of wheat substitution with whole rice meal was tested with 4 groups of 32 broiler chickens each, divided into 4 subgroups. Birds were fed as followed: group I (control) - with wheat-soy diets, group II - diets with 10% whole rice meal; group III - diets with 20% whole rice meal and group IV - diets with 30% whole rice meal. The inclusion of whole rice meal at 10% and 20% in poultry feed had no negative effect on weight gain, feed conversion ratio, slaughter traits and meat quality. The inclusion of 30% whole rice meal in compound feed for broiler chickens resulted in statistically significant reduction in weight gain and in the proportion of breast meat, but did not influence the feed conversion ratio and the chemical composition of white and red broiler meat.

7. Алексиева, Д., С.Чобанова, 2009. Изучение содержания свинца в фуражных добавках для комбинированных фуражей, т.1, 21-25. Всероссийской научно-практической конференции «Современное состояние и перспективы развития пищевой промышленности и общественного питания» г. Челябинск 11 декабря 2009 года. ISBN 978-5-696-03994-7.

ABSTRACT

Целта на проучването бе изясняване нивото на замърсяване с олово на основните минерални и витаминни добавки за фуражната промишленост - креда, дикалциев фосфат, натриев хлорид и различни витаминно-микроелементни премикси и доколко те допринасят за замърсяването като цяло на комбинираните фуражи с този тежък метал. За изпълнение на целта са събрани и анализирани 27 проби от някои от най-често използваните в практиката у нас добавки - креда, дикалциев фосфат, натриев хлорид, добавки на цинк, витаминно-микроелементни премикси. Проучването е направено през 2008 година и началото на 2009 година. Анализите са извършени в НИЛ на Тракийски университет - Стара Загора. Използвана бе атомно-абсорбционна спектрофотометрия за анализ на пробите за олово. Проведеното проучване дава основание за следните важни изводи: 1. Установено е, че до 30% от допустимата норма за съдържание на олово в комбинираните фуражи при смеските за носачки може да се дължи на кредата, което показва колко важен е мониторингът за олово при този компонент. 2. Добавки като сол, дикалциев фосфат, микроелементни смеси и витаминни премикси също може да допринесат за значителното увеличаване на съдържанието на олово в комбинираните фуражи. Доколкото тези компоненти се влагат в доста ниски концентрации в комбинираните фуражи, рисковете за увеличаване съдържанието на олово чрез тях не са големи.

8. Василев, Н., Ч. Митева, С. Чобанова, Ж. Герговска, Ю. Митев, 2011. Влияние на храненето върху репродуктивните функции на млечни крави, *Science & Technologies*, Vol. I, 5, 147-154. Influence of nutrition on the reproductive performance of dairy cows Available in: <http://www.sustz.com/bg/?f=journal&number=5> ISSN 1314-4111

ABSTRACT

During the last years a trend of negative correlation between productivity and fertility of dairy cows were observed. The most important are the lack of forages or feeding with poor quality forages. The negative energy balance in early lactation is associated with recovery of the sexual cycle, reproductive determining and cow's fertility. In recent years, omega-3 and omega-6 fatty acids are paying attention; they are categorized as essential acids and are included in the dairy cow's ratio. A number of experiments with the addition of fats to the cow's ratio were earned out in which was registered a positive effect on the index of fertilization of dairy cows. The studies carried out showed that feeding of excessive amounts of protein degradable in the rumen has a negative effect on fertility manifested in delayed first estrus and ovulation,

reduced fertilization rates of first insemination, extension of service period and the total fertility. Microelements deficiency leads to problems such as retained placenta, abortion and the little calf syndrome. The vitamins are essential for normal reproduction and productivity of dairy cows. Reproductive disorders caused by avitaminosis in cattle include delayed puberty, reduced libido during oestrus in females, low rate of fertilization, high embryo mortality, high perinatal mortality and congenital blindness.

9. Gidikova P., R. Deliradeva, **S. Chobanova**, G. Prakova, G. Mihailova, 2016. Heavy metal contents in homemade milk and cheese from villages with possible risk of environmental pollution. Science and technologies Vol.VI, 48-53. Available in: <http://www.sustz.com/journal/4/1474.pdf> ISSN - 1314-4111

ABSTRACT

Milk and dairy products are an important food group because of their nutritional features. Unfortunately, milk could be contaminated with heavy metals from the environment. **The aim** of this study was to investigate heavy metals (lead, cadmium and nickel) in homemade milk and cheeses from animals raised in villages with possible risk of pollution - Zmeyovo and Borilovo. **Materials and Methods:** Raw goat and cow milk samples as well as cheese samples were taken from two herds in Zmeyovo, two herds in Borilovo and raw cow milk from remote mountain village was taken as a control. Samples were analyzed using flame and graphite furnace atomic absorption spectrometry after microwave or wet digestion. The results obtained were divided in groups depending on the kind of dairy animals, type of feeding and villages. **Results:** Mean lead contents in milk ranged from 0.022 mg/kg in cow milk to 0.032 mg/kg in milk from grass-fed goats. In all milk samples the lead content was over the maximum permissible level of 0.020 mg/kg determined by Regulation EC 1881/2006. Cadmium and nickel levels were highest also in milk from grass-fed goats and in goats that were fed grass and locally grown barley and alfalfa. Lead and nickel contents in goat cheese were higher than in cow cheese, but cadmium contents were almost equal in all cheese samples. **Conclusions:** Lead levels in homemade milk and cheeses are cause of concern. Risk for heavy metals contamination of dairy products is higher in goat herds with grass pasture feeding.

10. Zhelyazkova, Ts. Zh., **S. I. Chobanova**, D. G. Pamukova, 2016. Energy and protein nutrition value of six grain legumes in the moderate climatic conditions of Bulgaria. Научно-техническият прогрес в селскохазяйственното производство. Аграрна наука – селскохазяйственното производство Сибири, Казахстан, Монголии, Беларусии и Болгарии: материали XIX Международна научно-техническа конференция (Минск, 19–21 октомври 2016 г.). Том 1 /редкол.: П. П. Казакевич (гл. ред.), С. Н. Поникарчик/, Минск: НПЦ НАН Беларусии по механизацията на селското хазяйство, т.2, 236-241 ISBN 978-985-90306-6-6

https://scholar.google.com/scholar?hl=bg&as_sdt=0%2C5&q=Zhelyazkova+Ts.Zh.%2C+Chobanova+S.I.%2C+Pamukova+D.G.%2C+2016.+Energy+and+Protein+Nutrition+Value+of+Six+Grain+Legumes+in+the+Moderate+Climatic+Conditions+of+Bulgaria.+%D0%9C%D0%B5%D0%B6%D0%B4%D1%83%D0%BD%D0%B0%D1%80%D0%BE%D0%B4%D0%BD%D0%BE%D0%B9+%D0%BD%D0%B0%D1%83%D1%87%D0%BD%D0%BE-

РЕЗЮМЕ

Проблемът с протеиновото хранене на животните ще бъде решен основно чрез увеличаване на производството на растителни протеини. Зърнените бобови култури са една от алтернативите за производство на повече растителен протеин. Изследването на химичния състав и енергийната стойност на зърнените бобови култури и връзката им с продуктивността на животните е надеждно средство за идентифициране на най-добрата

фуражна култура за специфичните агроклиматични условия. Целта на настоящото изследване е да се установи химичния състав и да се изчислят енергийната и протеинова хранителност на зърнените бобови -пролетен и зимуващ грах, пролетен фий, горчив фий, тревист грах и нахут при агроекологичните условия на Централна Южна България. От зърнените бобови култури, отглеждани при неполивни условия в Централна Южна България, с най-високо съдържание на протеини са пролетният фий и тревният грах. Тяхната протеинова хранителна стойност е най-висока за непрехивните и прехивните животни. Най-високата енергийна стойност за домашни птици (MEpoultry) е установена за горчив фий и пролетен фий – съответно 14,63 и 14,58 MJ/kg сухо вещество. Пролетният и зимуващият грах имат най-висока енергийна хранителност за прасета (DEpigs) – съответно 16,84 и 16,74 MJ/kg сухо вещество. Съдържанието на КЕМ и КЕР е най-високо в тревния грах, съответно 1,48 и 1,65.

11. Barakova, T., G. Delchev, N. Valkova, S. Chobanova. 2018. Effect of some herbicides and their mixtures with growth regulator and foliar fertilizer on fat content in cotton (*Gossypium hirsutum* L.) seeds. Proceedings Book of 2nd International Conference on Food and Agricultural Economics, Alanya, 27-28 April 2018, 283-290. ISBN: 978-605-245-196-0 <https://ageconsearch.umn.edu/record/296722/>

ABSTRACT

The research was conducted during 2013-2015 with two cotton cultivars - Helius and Danny (*Gossypium hirsutum* L.). It was investigated five herbicides: Goal 2 E (oxyfluorfen) - 800 ml/ha; Linuron 45 SC (linuron) - 2 l/ha; Wing-P (pendimethalin + dimethenamid) - 4 l/ha; Merlin 750 WG (isoxaflutol) - 50 g/ha; Bazagran 480 SL (bentazone) - 1.5 l/ha. They were treated separated or combined with growth regulator Amalgerol 5 l/ha or foliar fertilizer Lactofol O-8 l/ha in the budding stage of the cotton. It has been found that investigated herbicides and their combinations with growth regulator and foliar fertilizer do not have a phytotoxic effect on the fat content of the cotton seed cultivar Helius. These herbicides and tank mixtures reduce the fat content in the seeds of cultivar Danny. The decrease is greatest in the Linuron 45 SC herbicide and its combination with Amalgerol. For the first time, it has been established that, from the point of view of the technology for cotton growing of cultivar Helius, technologically the most valuable are all herbicides and their combinations with growth regulator and foliar fertilizer. Technologically the most valuable in cotton cultivar Danny are tank mixtures of herbicides Wing-P and Bazagran 480 SL with growth regulator Amalgerol. They combine high values and high stability of fat content in cotton seed during different years. The alone use of herbicide Linuron 45 CK and its combination with Amalgerol receives negative assessments and should be avoided. The most economically effective are tank mixtures of herbicides Wing-P and Bazagran 480 SL with growth regulator Amalgerol.

12. Karkelanov, N., S. Chobanova, K. Dimitrova, I. M. Whiting, S. P. Rose, V. Pirgozliev, 2020. Feeding value of de-hulled sunflower seed meal for broilers, *Acta Agroph.*, 27, 31-38 eISSN: 2300-6730 ISSN: 1234-4125 <https://hau.repository.guildhe.ac.uk/id/eprint/17589/>

ABSTRACT

The effects of de-hulled sunflower seed meal (SFM) samples with different crude protein (CP) and non-starch polysaccharide (NSP) content on apparent metabolizable energy (AME), AME metabolizability (EM) and pre-caecal protein digestibility (pcPD) were examined. The birds were fed one of four mash diets. On a per kilogram basis, the basal diet (BD) contained as major ingredients 549.5 g wheat, 150 g soybean meal and 175 g full fat soybean meal as well as 215.4 g crude protein kg⁻¹ and 12.81 MJ AME kg⁻¹. Another three diets containing 200 g kg⁻¹ of each of three experimental SFM samples in place of the BD were also mixed.

Each diet was fed to birds in ten pens with two male Ross 308 broilers ranging in age from 8 to 21 days. Dietary AME was determined from excreta collection between days 17 and 21, while AME, EM and pcPD were determined when the birds were 21 days old. The substitutional method was used to determine AME, EM and pcPD in the SFM samples. The SFM samples high in NSP had lower AME ($P = 0.001$), EM ($P < 0.001$) and pcPD ($P = 0.005$). The beneficial effect of carrying out a further de-hulling of SFM seems to be mediated through reduced NSP content and improved energy and protein bioavailability.

13. Чобанова, С., Д. Пенков, 2021. Энергийна и протеинова хранителност на слънчогледов шрот с различно съдържание на суров протеин при опити с птици от кокошия вид, Фуражи и хранене, 4, 27-31.

http://feedspkf.com/index.php?option=com_content&view=article&id=145&Itemid=138

ABSTRACT

Using methodology for balance experiments, the apparent (AMEn-o), the true metabolic energy (TMEn-o), as well as the true digestibility of the essential amino acids of 4 batches of sunflower meal were determined by 25%, 37%, 45% and 50% crude protein in the dry matter (respectively SM25, SM37, SM45 and SM50). The experiments were performed simultaneously with intact and cecectomy birds and the results were averaged. The following results were obtained in dry matter: AMEn-o: 5.82 for SM25, 7.96 for SM37, 8.37 for SM45 and 9.67 MJ/kg for SM50. For TMEn-o the values by batches are as follows: 6.63, 7.73, 9.16 and 10.46 MJ/kg DM. The average true digestibility of essential amino acids does not vary significantly by batches (from 84.20 at SM25 to 87.80 at SM45) 96% for all batches. The lowest digestibility is reported for lysine and threonine in the batch SM25 (73-75%) and the highest for arginine 96% in all batches.