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The effects of feeding clinoptilolite on hematology, performance, and health of newborn lambs.

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Source

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Abstract

The effects of feeding clinoptilolite on hematology, performance, and health of newborn Balouchi lambs were evaluated in this experiment. In a completely randomized design, 30 newborn lambs were allocated to three groups and fed by basal diet (C0; without clinoptilolite) and C1 and C2 (the basal diet plus 1.5% and 3% clinoptilolite, respectively, for 6 weeks (3 weeks before and 3 weeks after weaning)). Blood samples were taken from all lambs, at the time when the animals were allocated to the experimental diet and at the end of each week of experiment, and analyzed for hematology, plasma fibrinogen, and total protein. Performance and health of all lambs were measured. Fecal consistency score and diarrhea severity were evaluated. There was no difference between lambs in case of hematological parameters. Lambs fecal consistency score and severity of diarrhea were lowest ($P < 0.05$) for lambs on C1 and C2 and highest for lambs on C0. Dry matter intake and feed conservation ratio were similar between the groups of lambs fed by different diets, but daily gain of lambs differed significantly ($P < 0.05$) and was higher in C2. It was concluded that addition of 3% clinoptilolite to starter diet of newborn lamb can reduce incidence and severity of diarrhea, although its effect on hematology and performance was negligible.

PMID: 20013357 [PubMed - indexed for MEDLINE]

Folia Microbiol (Praha). 2000;45(6):567-71.

Influence of intoxication with organophosphates on rumen bacteria and rumen protozoa and protective effect of clinoptilolite-rich zeolite on bacterial and protozoan concentration in rumen.

Nistiar F, Mojzis J, Kovác G, Seidel H, Rácz O.

Source

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Abstract

The effect of O-ethyl-S-(2-diisopropylaminoethyl) methylthiophosphonate on rumen bacteria and rumen protozoa was investigated in sheep (after premedication with clinoptilolite-rich zeolite and without that premedication). In control animals a decrease in the total concentration of rumen protozoa was observed 3-7 d after intoxication (particularly in small and large ones). In clinoptilolite-rich-zeolite-treated animals only a slight decrease in protozoan numbers occurred during the first hours after the intoxication. Similarly, in every category of rumen bacteria marked differences between the groups were recorded, particularly in concentration of lipolytic bacteria. The results suggest some protective effect of clinoptilolite-rich zeolite for rumen microbiota against the organophosphate poison.

PMID: 11501425 [PubMed - indexed for MEDLINE]

[In vivo reduction of radiocaesium with modified clinoptilolite in sheep].

[Article in Czech]

Jandl J, Novosad J.

Source

Veterinary Research Institute, Brno, Czech Republic.

Abstract

The efficiency of the sorbent prepared by immobilization of [Iron(II)hexacyanoferrate(II)] on clinoptilolite--marked as ZEOFe--in reduction of the radiocaesium Cs-137 has been in vivo investigated in sheep. It was found that an application of this modified clinoptilolite affected both primary and secondary resorption of Cs-137 also by interrupting the enteral cycle of radiocaesium in sheep. It was proved that ZEOFe accelerated approx. twice the excretion of Cs-137 from sheep's body. The whole effect resulted in 15 to 50 times lowering of the equilibrium concentration of radiocaesium in the case of constant intake of the contaminated feed and simultaneous application of 50 grams of ZEOFe daily. The actual reduction depends mainly on the way of administration. The reduction of Cs-137 by non-modified clinoptilolite--ZEO--has been investigated, too. More than 10x lower sorption efficiency has been observed in comparison with ZEOFe.

PMID: 8585136 [PubMed - indexed for MEDLINE]

Sci Total Environ. 1993;Suppl Pt 2:1453-7.

Evaluation of aluminosilicate compounds to reduce aflatoxin residues and toxicity to poultry and livestock: a review report.

Harvey RB, Kubena LF, Phillips TD.

Source

USDA, Agricultural Research Service, Food Animal Protection Research Laboratory, College Station, TX 77845.

Abstract

The aflatoxins (AFs) are reported to be hepatotoxic, mutagenic, immunosuppressive, and carcinogenic. Methods to prevent, reduce, or remediate AF toxicity and residues in the environment are in great demand. Various AF-detoxification procedures are reviewed with particular emphasis on ammoniation and the use of adsorbent compounds to bind AF. A series of in vivo experiments by the authors are reviewed that evaluated the ability of a specific hydrated sodium calcium aluminosilicate (HSCAS) adsorbent to reduce the toxicity of AF to poultry and livestock and to reduce AF residues in milk. These studies showed that HSCAS forms stable bonds with AF in vitro, and when added to AF-contaminated poultry and livestock feeds, HSCAS is able to protect chickens, swine, and lambs from the deleterious toxic effects of AF and to reduce AF residues in milk of dairy cows and goats. These results indicate that HSCAS, when used in conjunction with other mycotoxin management practices, may prove effective for the preventive management of AF-contaminated feedstuffs in livestock and poultry and may reduce AF residues in the food-chain.

PMID: 8108715 [PubMed - indexed for MEDLINE]

Am J Vet Res. 1991 Jan;52(1):152-6.

Diminution of aflatoxin toxicity to growing lambs by dietary supplementation with hydrated sodium calcium aluminosilicate.

Harvey RB, Kubena LF, Phillips TD, Corrier DE, Elissalde MH, Huff WE.

Source

United States Department of Agriculture, Food Animal Protection Research Laboratory, College Station, TX 77840.

Abstract

Hydrated sodium calcium aluminosilicate (HSCAS), an anticaking agent for mixed feed, was added to the diets of growing wethers (mean body weight, 34.0 kg) and was evaluated for its ability to diminish the clinical signs of aflatoxicosis. The experimental design consisted of 4 treatment groups of 5 wethers each, consuming concentrations of 0 g of HSCAS and 0 g of aflatoxin (AF)/kg of feed (control; group 1); 20 g of HSCAS/kg (2.0%; group 2), 2.6 mg of AF/kg (group 3); or 20 g of HSCAS (2.0%) plus 2.6 mg of AF/kg (group 4). Wethers were maintained in indoor pens, with feed and water available ad libitum for 42 days. Lambs were observed twice daily and weighed weekly, and blood samples were obtained every 2 weeks for hematologic and serum biochemical analyses and for measurement of mitogen-induced lymphocyte-stimulation index. At the termination of the study, wethers were euthanatized and necropsied. **Body weight gain was diminished significantly (P less than 0.05) by consumption of 2.6 mg of AF/kg of feed, whereas body weight of lambs consuming HSCAS plus AF did not differ from that of control wethers.** The AF-alone treatment increased serum aspartate transaminase and gamma-glutamyltransferase activities, prothrombin time, and cholesterol, uric acid, and triglyceride values and decreased albumin, glucose, and urea nitrogen values, and urea-to-creatinine ratio. (ABSTRACT TRUNCATED AT 250 WORDS)

J Anim Sci. 1989 Oct;67(10):2772-81.

Effects of dietary protein level and clinoptilolite on the weight gain and liver mineral response of growing lambs to copper supplementation.

Pond WG.

Source

U.S. Department of Agriculture, Clay Center, NE 68933.

Abstract

Growing male Synthetic I (1/2 Finnish Landrace x 1/4 Dorset x 1/4 Rambouillet) lambs were used in two experiments (64 lambs in Exp. 1 and 63 in Exp. 2) to test the hypothesis that dietary CP level (9 or 14% of diet as fed) and/or clinoptilolite (clino; 0 or 2% of diet) affects growth and tissue mineral concentrations of growing lambs fed supplemental Cu. Lambs were individually fed their respective diets ad libitum and killed after 12 wk (Exp. 1) or 16 wk (Exp. 2) to obtain carcass measurements, organ weights and liver mineral concentrations. In Exp. 1, 20 ppm added Cu (as CuSO₄·5H₂O) increased mortality and depressed BW gain (P less than .01) and daily feed intake (P less than .05) in the presence or absence of clino and at both levels of CP. Liver Cu concentration was greater (P less than .01) in lambs fed added Cu than in those not fed Cu (408 ppm vs 110 ppm, respectively). Neither CP nor clino affected liver Cu concentration. **Clinoptilolite increased daily gain of lambs fed high CP but not low CP (P less than .01).** In Exp. 2, clino in the diet had no effect on daily gain or daily feed, but 20 ppm Cu addition depressed daily gain (P less than .01) and gain/feed (P less than .07). Organ weights and levels of trace elements other than Cu in the liver generally were not affected by diet in either experiment. **It is**

concluded that high dietary CP or 2% dietary clino did not protect against toxic signs of Cu when Cu was added to the basal diet (10 ppm Cu) at 10 or 20 ppm.

Vet Med (Praha). 1983 Nov;28(11):679-86.

[The effect of zeolite on experimentally induced acidosis in sheep].

[Article in Slovak]

Bartko P, Prosbová M, Blazovský J, Vrzgula L, Rysul'ová D.

Abstract

The effect of zeolite (clinoptilolite) on experimentally induced metabolic acidosis was studied in sheep under experimental conditions. Sucrose was administered at the doses of 10 and 15 g per kg l. w. either alone or, in other groups, together with 0.45 g zeolite per kg l. w. The content of volatile fatty acids in rumen contents and the indices of acid-base homeostasis of blood were monitored in the subsequent 24 and/or 48 hours. The examinations showed that simultaneous administration of zeolite with sucrose failed to prevent the rise of metabolic acidosis but the drop in the indices of acid-base homeostasis was less severe, or was delayed by three to six hours. The dose of 0.45 g zeolite per kg l. w. was found to be insufficient for the prevention of a medium-severe or severe course of metabolic acidosis.

PMID: 6322406 [PubMed - indexed for MEDLINE]

Vet Med Nauki. 1983;20(8):36-40.

[Effect of Bulgarian potassium-calcium zeolites on the assimilation of macro- and trace elements in lambs].

[Article in Bulgarian]

Petkova E, Venkov T, StanchevKh.

Abstract

Experiments were carried out with 12 test and 6 control male lambs from weaning at 20 days of age up to the 65th day. Both groups were kept under equal conditions. The test lambs were given their basic ration plus 4 per cent of a Bulgarian potassium-calcium zeolite. It was found that the treatment of lambs with a zeolite did not lead to changes in the dry matter content, the fats, and the crude protein in the analyzed fractions: carcass head, viscera, and digestive apparatus. There was, however, an increase in the ash. It was also established that the test lambs deposited higher amounts of Ca, P, Mg, and Zn in the parts referred to. The addition of 4 percent zeolite resulted in the increase of the average daily gain by 19.3 per cent.

PMID: 6320521 [PubMed - indexed for MEDLINE]