YACOWITZ, H.

storage. Toxic activity could be demonstrated from the microsomes of both the epithelial and muscular layers of the infected ceca. Further use of discontinuous sucrose, gradients and ultracentrifugation have shown that the microsomal fraction of infected cecal tissue contains up to 10 times more protein than that of the noninfected cecal tissue.

KEY WORDS: Eimeria tenella, toxic activity, chicken, and ceca.

EFFECTS OF PELLETING ON UTILIZATION OF FIBEROUS FEEDSTUFFS IN CHICKEN DIETS. Y. Xiong, K.C. Behnke* and C.W. Deyoe. Dept. of Grain Science and Industry, Kansas State University, Manhattan, KS 66506.

Three diets with calculated crude fiber contents of 5, 8 and 11%, respectively, were formulated to insure that NRC nutrient requirements were met. Each diet was fed as either a mash (M) or as a crumbled pellet (P). Pelleting was done under controlled conditions to optimize pelleting efficiency. One-hundred twenty layer type male birds, 12 weeks of age, were randomly allocated to the six diets (5 replications, 4 birds per replication, 6 treatments). All birds were housed in grower batteries and given feed and water ad libitum. Apparent metabolizable energy measurements were obtained using four consecutive 24 hour total collection periods with the birds being fed at just below ad libitum level.

The growth rate of the birds on the M diets decreased significantly with increasing fiber levels. Fiber content, however, did not affect the growth rate of birds fed the P diets. Feed intake increased with increasing dietary fiber levels. Average daily gain data when coupled with intake data suggest that birds on the P diets were able to adjust intake to meet energy and nutrient requirements while those on the M diets were not.

Feed efficiency decreased with increasing fiber levels with no differences ($P > .5$) between P and M at the lower fiber level, but a significant difference at the highest levels ($P < 0.01$). Pelleting improved feed efficiency by 13.6% over the M diet at the 11% fiber level. Pelleting effects demonstrated the same trends when examining AME with the pelleted high fiber diet giving a significantly improved ANE value over the same diet in mash form.

KEY WORDS: Pelleting, Fiberous feedstuffs, Chicken diets

STUDY OF THE NUTRITIONAL VALUE OF THE MARINE SPONGE, CHONDRILLA NUCULATA. Harold Yacowitz* and Thomas G. Zaccone, Health Research Institute, Fairleigh Dickinson University, Madison, NJ 07940 and Department of Zoology, University of Rhode Island, Kingston, RI 02881.

The nutritional value of a potential source of marine animal protein, chicken liver sponge (Chondrilla nuculata), was determined using chemical analyses and chick growth studies. Amino acid composition and protein content of the dried sponge compared favorably with dehulled soybean meal. Two chick experiments were conducted. The first experiment employed day-old chicks fed oven-dried sponge at 4 and 8% in a low protein corn-soy ration. The second experiment involved 5-week old chicks fed lyophilized and oven-dried sponge at 7.6% in a corn based ration.

The sponge exhibited partial growth inhibition in both experiments. In the first trial, there was some adaptation to sponge feeding, since the degree of growth inhibition was reduced between the second and fourth weeks. The growth inhibitor(s) was partially heat labile. Significant ($p < .05$) pancreatic hypertrophy or hyperplasia occurred in chicks fed lyophilized sponge.

Chondrilla nuculata is a natural food for sea turtles and certain fish. The inhibitor (s) in this sponge will require inactivation or removal before feeding to chicks.

KEY WORDS: NUTRITIONAL VALUE, MARINE SPONGE, CHONDRILLA NUCULATA

INFLUENCE OF VITAMIN A NUTRITURE ON THE HUMORAL AND CELL-MEDIATED IMMUNE RESPONSE OF BROILER CHICKS. C.M. Young*, and J.L. Sell, Dept. of Animal Science, Iowa State University Ames, IA. 50011.

The effects of retinol and retinoic acid on the humoral and cell-mediated immune