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The Relative Weight Accessory Organ of Lohman Chicken Given Uronic Acid Addition in Drinking Water

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ABSTRACT

The goal of this study was to see how uronic acid isolated from *Sargassum crassifolium* affected the accessory organs of Lohman hens. *Sargassum crassifolium* is a non-starch polysaccharide source that contains various crude fibres and bioactive substances that impact the accessory organ process in laying hens, resulting in changes in measurement. One hundred and twenty laying hens were divided into two groups: (1) those who preconditioned commercial-grade feed with antibiotics, and (2) those who did not. In drinking water, the hens were split into individual cages for each of the five brown seaweed treatments. A1=0.0% *S. crassifolium* (control); A2=2% *S. crassifolium*; A3=5.0% *S. crassifolium*; A4=7.5% *S. crassifolium*; A5=10.0 percent *S. crassifolium*. The study used a complete randomized factorial design with five treatments, two factors, and three replications. Six laying hens were used in each replication. For each part of the auxiliary organ, the relative empty weight (percent BW) is computed. The liver, heart, pancreas, spleen, bile, and kidney are all auxiliary organs. There were variations in empty weight (percent BW) of the heart, pancreas, spleen, bile, and kidney across treatments (P<0.05), but no differences (P>0.05) in the liver. It can be determined that uronic acid isolated from *S. crassifolium* increased the empty weight accessory organ of Lohman chicken hearted foodstuffs. The treatment of 10.0 percent *S. crassifolium* in drinking water without additional antibiotics had the largest empty weight for Lohman's auxiliary organ.

Keywords: *crassifolium*, uronic acid, Lohman chicken, accessory organ.

1. INTRODUCTION

Brown seaweed (*S. crassifolium*) contains significant amounts of sugar, sulphate, and uronic acid, and has been proven to have antiviral and antibacterial properties [1]. Polysaccharides, polyphenols, and carotenoids are all found in *S. crassifolium*. Polysaccharides are antithrombotic, antitumor, antioxidant [4], antiproliferative (uncontrolled cell division), anti-inflammatory [5], and anticoagulant [6]. They also facilitate digestion and have antithrombotic, antitumor, antioxidant [4], antiproliferative (uncontrolled cell division), anti-inflammatory [5], and anticoagulant properties [6]. Several components in seaweed, such as polysaccharides, dietary fiber, minerals, proteins, alkane acids, vitamins, polyphenols, and carotenoids, show the availability of endless antioxidants [7].

Because seaweed is abundant and has not been fully utilized, it can be converted into animal feed ingredients. According to Anggadiredja *et al.* [8] and March *et al.* [9], seaweed is a natural source of non-starch polysaccharides that contains many crude fibers, and its bioactive factors influence the digestive process, resulting in changes in caecum microflora and more efficient nutrient utilization by laying hens. [8,9]. Digestion is an important activity of animal to process and utilize the feed [10]. During its evolutionary process, several animals develop morphological and physiological adaptations, including in the digestion system. The digestive organs have developed necessary mechanisms in order to be able to digest the feed, especially in chicken. Each of these organs either generates or accumulates materials that infiltrate ducts into the digestive tract. Allowing the nutrient of *S. crassifolium* with uronic acid content consumed by

chicken affect the digestive process. The chicken digestive process in the digestive tract with the ¹³ of an accessory organ. Therefore, the condition of the gastrointestinal tract and accessory organs is important in determining the performance of chicken.

The use of *S. crassifolium* as a capability seaweed additive in feed ingredients, in particular feed components that have an effect on the boom of accent organs nonetheless now no longer reported. Therefore this contemplates aimed to have a look at the outcomes of uronic battery-acid extracted from *S. crassifolium* as an antibiotic replacement at the empty weight (% BW) for every section of the accent organ of Lohman chook hearted meals stuffs.

2. MATERIAL AND METHODS

2.1. Research Material

This observe used a hundred and twenty Lohman traces elderly 22 weeks and brown seaweed (*S. crassifolium*). The business feeds used withinside the observe had been feed containing antibiotics and feed with out supplementary antibiotics. Supplementation of chocolate-brown seaweed (*S. crassifolium*) extract became 0, 2.5, 5.0, 7.5 and 10.0% given in ingesting water. The nutrient content material of the feed is provided in Table 1. The cage used as an man or woman battery system (length 35x36x42 cm) geared up with a feeding area, ingesting water and lights (16L/8D lights system). The chickens had been tailored to the provisional feed for 1 month and ingesting water for 1 week earlier than remedy began. The Chicken renovation became executed for three (three) months.

Table 1. Nutrient content of the feed

Nutrient	Nutrient composition
Dry matter (%)	93.02
Ash (%)	10.77
Crude protein (%)	18.12
Ether extract (%)	5.63
Crude fibre (%)	6.16
BETN (%)	52.34
Gross energy (kcal/kg)	37.34
Calcium (%)	5.85
Phosphor (%)	0.71

2.2. Preparation of Seaweed extract

Seaweed extract became made through blending one hundred grams of dried seaweed with ethanol (90% (five:1), stirred for three hours and allowed to face for

twenty-four hours at extension temperature after which focused at 50°C.

2.3. Feeding Trial

One hundred and twenty Lohman traces elderly 18 weeks had been dual-laned into 2 groups: (1) chickens precondition commercial-grade feed containing antibiotics and (2) chickens precondition feed with out supplementary antibiotics. The hens given five brown seaweed remedy of various concentrations (0, 2.5, 5.0, 7.5 or 10%) withinside the drunkenness water. feed and drunkenness inundate had been precondition spontaneously with inside the morning (07.00 AM) and afternoon (five.00 PM).

2.4. Variables determined

The variables determined on this take a look at blanketed the following: Relative empty weight (% BW) is calculated for every phase of the accent organ. The accent organ includes the liver, heart, pancreas, spleen, bile and kidney.

2.5. Trial Design and Data Analysis

An test become achieved in a 5x2 factorial association the use of an altogether randomized illustration with three replications. Each replication consisted of six laying hens. The first element become the extent of brown seaweed (*S. crassifolium*) in ingesting water (A1 = 0% *S. crassifolium* (control); A2 = 2.5% *S. crassifolium*; A3 = 5.0% *S. crassifolium*; A4 = 7.5% *S. crassifolium*; A5 = 10.0% *S. crassifolium*). The 2nd element become the presence or absence of antibiotics in feed (B1 = feed with extra antibiotics, B2 = feed with out supplementary antibiotics). The collections had been analyzed victimizations evaluation of variance observed with the aid of using absolutely huge different (HSD) check the use of the Minitab @sixteen statistical software program program.

3. RESULTS AND DISCUSSION

3.1. Results

The consequences of statistical evaluation at the accent organ of Lohman chickens confirmed that the remedy of uronic acid tiers and interplay form of feed has sizeable differences (P< 0>0.05) for liver, in which the remedy of feed without antibiotics with a degree of 10% *S. crassifolium* (B2A5) gave a generally highest empty weight (% BW) of heart, pancreas, spleen, and kidney compared to other treatments (Table 2). The treatment 10.0% *S. crassifolium* without additional antibiotics in drinking water has the highest empty weight (% body weight) for the heart (0.473%),

Table 2. Effect of uronic acid level on the accessory organ weight (% of BW) of Longman hens

Treatment*	Accessory Organ weight (% of BW)					
	Liver	Heart	Pancreas	Spleen	Bile	Kidney
A1B1	1.933	0.423 ^{ab}	0.170 ^{bc}	0.1000 ^c	0.097 ^a	0.217 ^{abc}
A1B2	2.050	0.383 ^b	0.190 ^{abc}	0.163 ^{bc}	0.077 ^{abc}	0.203 ^{bc}
A2B1	1.787	0.377 ^b	0.170 ^{bc}	0.157 ^{bc}	0.087 ^{ab}	0.130 ^{cd}
A2B2	1.850	0.400 ^{ab}	0.173 ^{bc}	0.200 ^{ab}	0.103 ^a	0.163 ^{bcd}
A3B1	1.860	0.423 ^{ab}	0.157 ^c	0.200 ^{ab}	0.110 ^a	0.200 ^{bc}
A3B2	1.733	0.373 ^b	0.200 ^{abc}	0.093 ^c	0.050 ^{bc}	0.253 ^{bc}
A4B1	1.813	0.403 ^{ab}	0.160 ^c	0.137 ^{bc}	0.090 ^a	0.083 ^d
A4B2	1.853	0.430 ^{ab}	0.223 ^{ab}	0.230 ^{ab}	0.043 ^c	0.250 ^{ab}
A5B1	1.940	0.397 ^{ab}	0.183 ^{abc}	0.210 ^{ab}	0.100 ^a	0.163 ^{bcd}
A5B2	2.093	0.473 ^a	0.233 ^a	0.260 ^a	0.077 ^{abc}	0.310 ^a
P value	0.757	0.002	0.047	<0.001	<0.001	<0.001
9 MSE	0.111	0.016	0.011	0.017	0.008	0.020

^{a-d} Means within the same column with no common superscript differ significantly ($P \leq 0.05$).

*)A1 = 0% Uronic -acid (control), A2 = 2.5% Uronic acid, A3 = 5% Uronic acid, A4 = 7.5% Uronic acid, A5 = 10% Uronic acid, B1 = feed with antibiotic; B2 = feed without antibiotic.

pancreas (0.233%), spleen (0.2607%) and kidney (0.310%).

3.2 Discussion

The lower in attention ² with inside the ileum can also additionally end result from a quicker absorption of sodium chloride than of water on this segment. The secretion of bile acids with the aid of using the fowl represented approximately 8% of the all-inclusive aspiration of dry battery problem with the aid of using bird, thereby comprising a far-achieving cal² late with inside the duodenal content. On pinnacle of 90% of the secret² bile acids had been reabsorbed with the aid of using the intestine. The extent of the secreted bile juice, calculated from the secretion of bile acids and their attention in bile, became high; nearly equaling the whole each day water consumption of the laying fowl.

. Bile ³ it in motion pancreatic lipase extremely anticipates the denaturation of this enzyme when it goes away the aboveground of emulsified abdominal droplets. Bile is a considerable fountain-head of abdominal release into the duodenum and explanation for the ascertained contradic³ in abdominal edibility in this segment. What is more, digesta and bile are shuttled between the stomachal territory and duodenum via anti-peristaltic reflexes to exaggerate the enzymatic and machine-driven instrumentality of digestion. This instrumentality hawthorn furthermore agrandizement the entangle absorption of abdominal in the duodenum [11].

In birds the liver is the ⁵ biochemical manufactory responsible virtually for the synthesis, metabolism, excretion, and detoxification processes, and is interested in several me⁷bolites and homeostatic functions. It stimulates the digestion and metabolism, regulating the production, storage, and release of carbohydrates, lipids and proteins [12]. The liver brings out diversification of proteins, including enzymes, hormones, parentage proteins, coagulation factors and unsusceptible factors. This demonstrates that the treatment of behavior towards with augmentation uronic battery-acid extracted from *S. crassifolium* in drinking water does not contain toxic substances that can cause the liver to become excessive. One of the functions of the liver is the detoxification of toxins and in case of abnormalities in the ¹ liver indicated by an enlargement or diminution of the liver.

The liver plays the main function in digestion, metabolism, and regulation the broiler production. Among the dietary factors, the feed restriction, anti-nutritional factors, and feed additives were reported to influence the structure and the metabolic function of the liver [13]. The size of the liver is affected greatly by type, age, size and livestock activity states that the liver is known to be very sensitive to toxins and anti-nutrition. Magnification of the heart size is usually caused by the addition of cardiac muscle tissue and the heart wall thickened. The increased size and the weight of the heart muscle are due to increased work in the heart. The secretion of enzymes by the pancreas and bile salt secretion by the liver occurs when the substrate is found only in accordance with enzymes and bile salts are produced [14].

The pancreas is the organ that functions in digestive system and located near the digestive tract. The pancreas was reported to produce the enzymes which hydrolyze each considerable nutrients into inconsequential monomers that buoy be wrapped up into the parentage or lymph [15]. The lean is the principal unsusceptible instrument of parturition pullets, and its comparative dialect heft was affected by the treatments. Any changes in the comparative dialect heft of this organ in laying pullets respectively because fed different antibiotic sources. Generally, feed intake without antibiotics with a level of uronic acid extracted from *S. crassifolium* in drinking water tended to be higher than feed intake with antibiotics. This locating suggests that uronic acid extracted from *S. crassifolium* in ingesting water can growth feed consumption and purpose a clean digestion technique for feed. Zhao *et al.* [4] Stated that *S. crassifolium* can facilitate meals digestion. This examine suggests that alginate from the uronic acid extracted from *S. crassifolium* in all likelihood performed a crucial function in growing the feed consumption of Lohman chickens. Brownlee *et al.* [16] said that alginate is a soluble fibre this is useful in lowering blood glucose ranges, lowering toxicity ranges of the intestinal lumen, lowering microbial colonies that aren't useful, soaking up pollutants withinside the colon and converting intestinal microflora. These situations purpose the feed absorption technique, and the charge of digestive tract emptying to be quicker and purpose extended feed consumption, after which affected to the accent organ.

4. CONCLUSION

The management of uronic acid extracted from *S. crassifolium* in ingesting water rather for antibiotics has been capable of boom organs weight (% Body Weight) of laying Lohman hens, wherein the remedy of feed without antibiotics with a degree of 10% *S. crassifolium* (B2A5) gave a usually maximum organ weight (% BW) of heart, pancreas, spleen, and kidney.

REFERENCES

- [1] Mandal, P., C.G. Mateu, K. Chattopadhyay, C.A. Pujol, E.B. Damonte and B. Ray, 2007. Structural features and antiviral activity of sulphated fucans from the brown seaweed *Cystoseira indica*. *Antiviral Chemistry & Chemotherapy*, 18: 153-162.
- [2] Merdekawati W dan A.B. Susanto, 2009. Kandungan dan komposisi pigmen rumput laut serta potensinya untuk kesehatan. *Squalen*, 4(2): 41-47.
- [3] Wijesinghe W.A.J.P and Y.J. Jeon, 2011. Enzyme-assisted extraction (EAE) of bioactive components: A useful approach for recovery of industrially important metabolites from seaweeds: A review. *Fitoterapia*, 83(1): 6-12.
- [4] Zhao, X., C.H. Xue, Y.P. Cai, D.F. Wang and Y. Fang, 2005. The study of antioxidant activities of fucoidan from *Laminaria japonica*. *High Technology Letters*, 11: 91-94
- [5] Shiratori, K., K. Ohgami, I. Ilieva, X.H. Jin, Y. Koyama, K. Miyashita, K. Yoshida, S. Kase and S. Ohno, 2005. Effect of fucoxanthin on lipopolysaccharide-induced inflammation in vitro and in vivo. *Exp. Eye Res.*, 81: 442-428.
- [6] Chandia N.P and B. Matsuhira, 2008. Characterization of a fucoidan from *Lessonia vadosa* (Phaeophyta) and its anticoagulant and elicitor properties. *International Journal of Biological Macromolecules*, 42: 235-240.
- [7] Burtin, P, 2003. Nutritional value of seaweeds. *Electron. J. Environ. Agric. Food Chem.*, 2: 498-503
- [8] Anggadiredja, Hasanudin, Sidiq A.S, Pratomo S, Rudyansyah A, 1996. Screening of marine algae from Warambadi Seachore Sumba Island of Indonesia for antibacterial activity. *Photomedicine*, 1996(3): 1-37
- [9] March, W., N. Hamid, T. Liu, J. Lu and W.L. White, 2013. Fucoidan from New Zealand *Undaria Pinnatifida*: monthly variations and determination of antioxidant activities. *Carbohydr Polym.*, 95: 606-614.
- [10] Montuelle SJ, Kane EA. 2019. Food capture in vertebrates: a complex integrative performance of the cranial and postcranial systems. In: Bels V, Whishaw IQ, eds. *Feeding in Vertebrates: Evolution, Morphology, Behavior, Biomechanics*. Cham: Springer International Publishing, 71-137.
- [11] Tanchaorenrat, P.; Ravindran, V.; Zaefarian, F.; Ravindran, G. 2014. Digestion of fat and fatty acids along the gastrointestinal tract of broiler chickens. *Poult. Sci.* 93, 371-379
- [12] Denbow, D.M., 2000. Gastrointestinal anatomy and physiology, In: *Sturkie's Avian Physiology*. Academic Press, New York, NY USA, pp. 299-325.
- [13] Nastain F.S., B P Mahardhika , M Ridla and R Mutia. 2021. Visceral organ weight of broiler chicken fed different level protein and protease enzyme supplementation diet. *IOP Conf. Ser.: Earth Environ. Sci.* 788 012032.

- [14] Hasan S.A., S Harimurti and B. Arijadi. 2019. Effect of litter type on digestive tract and asseccory organ in the native chicken. The 8th International seminar on Tropical Animal Production, September 23-25, 2019, Yogyakarta, Indonesia.
- [15] Vertiprakhov V G, Grozina A A and Dolgorukova A M 2016 The activity of pancreatic enzymes on different stages of metabolism in broiler chicks Sel'skokhozyaistvennaya Biologiya 51 509– 15
- [16] Brownlee, I.A., A. Allen, J.P. Pearson, P.W. Dettmar, M.E. Havler and M.R. Atherton. 2005. Alginate as a source of dietary fiber. Critical review Food Science and Nutrition, 45:497-510.

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