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THE EFFECT OF ADDING COWS RUMEN CONTENT ON THE CHARACTERISTICS OF WEIGHT GAIN AND THE RELATIVE AND QUALITATIVE RATES OF GRASS CARP FISH *Ctenopharyngodon idella*

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ABSTRACT

The study was conducted in the fish laboratory, College of Agricultural Engineering Sciences, University of Baghdad, with the aim of using the contents of the rumen of cows supported with the prebiotic as a diet for grass carp fish. In the research, 190 fish were used, with an average starting weight of 40 g. 15 fingerlings, the fish were fed on four types of rations equal in protein, after crushing and grinding the materials and adding the contents of the rumen at rates of 10, 15and 20, fortified with a prebiotic of 2 g/kg, except for the control ration free of addition. The results of the research indicated that the second treatment had a significant superiority over all treatments in terms of body weight rates, weight gain, relative and specific weight rates, feed conversion ratio, feed conversion efficiency, and apparent digestion coefficient, followed by the third treatment, then the fourth treatment, and for all durations of the experiment. The results also indicated that the fourth treatment had a significant superiority in the characteristic of the time for the appearance of droppings after 10 h had passed from the presentation of the diet, followed by the third treatment and then the second treatment .The results also indicated that feed consumption increased significantly for the second treatment, followed by the third treatment, and then the fourth treatment.

Keywords: Rumen content, Thepax, yeast, Grass carp fishes

تأثير إضافة محتوى الكرش للأبقار على صفات الزيادة الوزنية والمعدلات النسبية والنوعية لأسماك الكارب العشبي *Ctenopharyngodon idella*

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الخلاصة

أجريت الدراسة في مختبر الأسماك، كلية علوم الهندسة الزراعية، جامعة بغداد ، بهدف أستعمال محتويات كرش الأبقار المدعمة بالسابق الحيوي Thepax كغذاء لأسماك الكارب العشبي، أستعمل في البحث 190 سمكة بمتوسط وزن ابتدائي 40 غم، وبواقع 15 سمكة لكل معاملة، وتم تغذية الأسماك بأربعة أنواع علائق متساوية في نسبة البروتين، بعد سحق وطحن المواد وإضافة محتويات الكرش بنسب 10 و 15 و 20٪، مدعمة بالسابق الحيوي Thepax 2 غم / كغم باستثناء معاملة السيطرة الخالية من الإضافة، أظهرت نتائج البحث أن المعاملة الثانية تميزت على جميع المعاملات في صفات معدلات وزن الجسم وزيادة الوزن والوزن النسبي والنوعي، تليها المعاملة الثالثة و ثم المعاملة الرابعة ولكافة فترات التجربة، كما أشارت النتائج إلى أن المعاملة الرابعة كان لها تفوق معنوي في زمن ظهور الفضلات بعد 10 ساعات من تقديم وجبة العلف ، تليها المعاملة الثالثة ثم المعاملة الثانية، كما أشارت النتائج إلى زيادة استهلاك العلف بشكل كبير في المعاملة الثانية تليها المعاملة الثالثة ثم المعاملة الرابعة.

الكلمات المفتاحية: محتوى الكرش، ثيباكس، خميرة، أسماك الكارب العشبي.

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INTRODUCATION

Slaughterhouses produce large quantities of rumen contents as a result of slaughtering large ruminant animals(**Serrapica *et al.*,2019**), which are undigested feed residues and contain large numbers of bacteria and protozoa, single-celled organisms that represent an important protein content called microbial protein and constitute 80% of the content of the digestive system in ruminants **(Genzebu& Tesfay, 2015).**

The researchers tended to pay attention to the manufacture of non-traditional feed from cheap materials, including the waste of factories, mills and hatcheries to reduce the cost of feed production by introducing a material of no value (contents of cow rumen) as it is rich in amino acids, starch and fiber **(Tachia *et al.*,2016)**, which is suitable for the feeding habits of the type of fish represented by grass carp, which are fish that feed on high and floating plants and grains, which is similar to the content of cows' rumen of these plants and grains, and these feed materials are subject to preference by grass carp fish, as soft plants and grains are preferred according to age and weight in fish **(Xie *et al.*,2018).**

Yeasts have been widely used as food additives that stimulate growth and improve the value of fodder**(Rakowska *et al.*,2017)** including the contents of the rumen of cows containing grains and grass in their digested and undigested form as an input into the components of fish diet. The addition of yeasts and enzymes aims to improve the productive qualities of fish and growth rates, and an increase in protein absorption and health in general **(Agboola *et al.*,2021).** The aim of the current study is to introduce the contents of the rumen of cows, which are digested and undigested food in the rumen of cows, fortified with the prebiotic Tepax, into the diet of grass carp fish as a fodder material and a source of cheap carbohydrates in promoting growth and production characteristics of the fish species in this study.

MATERIALS AND METHODS

The experiment

was conducted for a period of 1/20/2022 and lasted 96 d in the fish laboratory of the College of Agricultural Engineering Sciences , University of Baghdad, and 250 fish were selected out of 1000 fish from a private fish hatchery for the production of caviar, their weights ranged from 40-44 g. They were transported by a tank car at 5 am to the laboratory and then transferred to a large basin equipped with oxygen made of stainless steel with a capacity of 1000 L, after equalizing the temperature of the basin water and the water of the tank of the fish transport car, it was left in it for 7 d. Primary 40-44 g according to **Harmon(2009**).

Experiment requirements

Tanks made of glass, with a capacity of 72 cm^3, rectangular in shape, covered from the outside with plastic nets to prevent jumping of fish. They were supplied with an air pump for the purpose of maintaining oxygen concentration, and a heating heater within a temperature of 24 ˚C for the purpose of providing growth conditions. Measurements for each of oxygen, temperature and acidity of the water are measured twice a day in the morning. and at evening. The ponds were prepared after repairing the fractures and cracks with silicone material, the ponds were cleaned and sterilized with 5 g/L sodium chloride salt. The fish were fed gradually for 15 d depending on their ability to consume feed, down to 4% of body weight.

The fish were fed at the beginning with 1% gradually until they stabilized on 4% of the fish's mouth at the rate of three meals a day at 7 am, 12 pm, and 5 pm. The pH was measured by a portable Chinese-made pH meter. The temperature was recorded daily at 7:00 am, 1:00 pm, and 5:00 pm, during the experiment period, using a portable mercury thermometer according to **Alderton(2019).**

Preparing the rations

The components of the diet were prepared from the local markets and shown according to (Table, 1)**,** and the contents of the rumen were collected from the slaughterhouse in the city of Kut near the Al-Taqi Institute in the city, and dried in the sun for 10 d, when the air temperature was more than 50 ˚C. water at 37 ˚C for 10 min, and it was analyzed according to **AOAC(2003)** shown in (Table, 2), and after mixing the ingredients and observing the consistency of the mixture, the process of squeezing the ration was carried out in a Chinese-made Sonyo meat grinder, and the diameter of the fodder grain was 3 mm . and the contents of cows rumen was analyzed according to **AOAC(2003)** in**(**Table, 3).

Table (1) : Components of experimental diets

Components(%)	**Treatments**			
Components of experimental relationships	**T1**	**T2**	**T3**	**T4**
Fish protein	5	5	5	5
Protein concentrate	18.75	18.75	18.75	18.75
Soybean meal	35	35	35	35
yellow corn	8	7	3	1
Barley	7	3	3	2
Bran	5	3	2	1
Fish fat	1	1	1	1
Salt	1	1	1	1
vitamins and minerals	1	1	1	1
Flour	10	7	2	1
cow rumen content	6.25	6.25	6.25	6.25
Thepax	2	2	2	2

Table (2) : Chemical analysis of grass carp diets

Treatments	**Moisture (%)**	**Protein (%)**	**Fiber (%)**	**Ash (%)**	**Energy (%)**	**Carbohydrate (%)**	**Energy kcal/kg**
T1	11%	31.3	3.2	7.2	5.2	53.1	2461
T2	10%	31,1	4	6.2	5	53.3	2448
T3	9%	31.73	4.3	6.3	6	53.7	2516
T4	9.7%	30.9	5.1	5.5	4.2	54.3	2550

Table(3) : Chemical analysis of cow rumen content.

Components(%)	
dry matter	93
Crude protein	10
ether extract	3.5
raw fiber	25
Starch	30
Ash	10

Equations for calculating productive traits
T. W. G. (g) (Musharraf & Khan, 2019)

$$T.W.G=F.W. - L.W$$

Since:
(F.W) Final weight (g); (I.W) Initial weight (g).

Relative growth rate (R.G.R) (%) (Al-Ani, 2021)

$$R.G.R = \frac{W2-W1}{W1} x100$$

Since:
W1= First weight (g); W2= Second weight (g).

Specific growth rate (S.G.R) (%. g/d) (Musharraf & Khan, 2019).

$$S.G.R = \frac{LNW2-LNW1}{T2-T1} X100$$

Since
Ln W2= Natural logarithm of the second weight for the period T2.
Ln W1 = The natural logarithm of the first weight for the period T1.
T2 - T1 = The amount of time between the two weights.

Daily gain rate (D.G.R) (g) (Philipose *et al.*, 2013)

$$D.G.R = \frac{W2-W1}{T2-T1}$$

Since:
W1 = Initial weight(g); W2 = Final weight (g); T2-T1 = Duration of the experiment (d).
Statistical analysis

Statistical Analysis System

use **(SAS) 2012** in analyzing the data of the current study to show the effect of the treatments, according to the complete randomized design (CRD), and the results were tested by(**Duncan, 1955**) multifaceted test.
within a significant level (0.05) and (0.01) according to the following mathematical model equation: Yij = μ + Ti + Yij
So: Yij is the value of j seen for transaction i
μ = the general average of the studied trait.
Ti=effect of treatment i.
Yij = random error value.

RESULTS AND DISCUSSION
Average weights of experimental fish

The results of the statistical analysis shown in (Table, 4) indicated that the second treatment with a content of 10% of cow rumen ($p<0.01$) was significantly superior in the characteristic of the average body weights of fish, as the final weight was 73 g fish, and the superiority was on all treatments compared to the first control treatment. Final weight 58g. A fish and extended the experiment collect. It was followed by the third and fourth treatments 63.62 g of fish (in which the rumen contents were 15 and 20% / kg) respectively significantly superior to the control treatment and for all periods as well. The third treatment outperformed the fourth treatment for the periods mentioned in the experiment, but the weights of the fish

became more distinguished, as they increased in recent periods. The alimentary canal may have developed and the area of contact between it and the food mass increased, which led to an improvement in digestion and absorption. Another factor was the incorporation of the 7d digestion experiment within the period. (96 /d).

Table (4) : Weight averages of grass carp for the periods and length of the experiment (mean ± standard error)

Experiment Periods(d)								**Final Weight(g)**
Treatment	Initial Weightg(g)	14	28	42	56	70	84	96
T1	40 ±0 A	43 ±0.40 D	45 ±0.46 D	±. 46 0.35 D	50 ±0.69 D	50 ±0.69 D	51 ±0.52 D	59 ±0.57 D
T2	40 ±0 A	44 ±0.41 AB	47 ±0,51 A	50 0.80 A	53 ±0.57 A	57 ±1.72 A	61 ±0.91 A	73 ±0.57 AB
T3	40 ±0 A	45 ±0.41 A	±46 ±1.05 AB	±49 0.32 AB	51 ±0.52 B	56 ±2.30 B	57 ±2.30 B	63.8 ±0.43 BC
T4	40 ±0 A	44.5 ±0.29 ABC	44.9 ±0.31 ABC	±47.5 ±0.88 ABC	49.6 ±0.87 ABC	53.6 ±1.68 ABC	54 ±1.52 ABC	62 ±1.35 C
morale level	N.C	*	*	**	*	*	**	**

It is noted from results that the superiority of the second, third and fourth treatments in terms of average body weights of grass carp fish may be due to the addition of different levels of rumen contents and the microorganisms they carry that promote digestion and amino acids, and that supporting relationships with the prebiotic increases the readiness of amino acids as **Vallejos-Vidal *et al.*(2017)**, in their study involving feeding grass carp fish on diets fortified with the prebiotic, noted the spread of microorganisms on the mucous layer of the intestinal wall and an increase in the absorption of this amino acid lysine, and that the prebiotic Thepax in general is similar in its action to probiotics, as it promotes the growth of The microorganisms in the alimentary canal, and the alimentary canal may have evolved and the area of contact between it and the food mass increased, which led to an improvement in digestion and absorption. The reason for the improvement in the performance and production of grass carp fish may be due to the development in the mucous layers of the alimentary canal, including that it provides a good environment for the growth of microorganisms such as lactic bacteria and Bacillus subtilis and their role in the analysis of food by releasing microbial enzymes such as amylase and cellulase in the dissolution of bonds and facilitate the absorption of nutrients within the stream blood and this explanation was supported by researchers who used mannan and beta-glucan sugars in channa striat fish diets, and the improvement was evident in growth performance and health in general, and **Ringo *et al.* (2020)** concluded that vital reinforcements and vital precedents improve the health status of fish and the immunity of fish, noted **Xiay *et al.* (2020)** yeasts contains on beta-glucan and polysaccharide fibers supported by amino acids such as lysine, methionine and hydrogen sulfide contribute to microbial digestion and simplify and release nutrients that were reflected on growth performance in fishes and relative and qualitative growth characteristics in his study. This interpretation was supported by the opinion of the researcher **Ashour *et al.* (2019)** who used the previous one Bio-FOS with wall yeast observed a distinct growth and performance, fish Acipenser nudiventris at different concentrations of the prebiotic 0.5, 1, and 1.5 g/kg. An

improvement in the growth and vitality of Tilapia fish when probiotics were added to the feed rations. The biological precedents also support and enhance the colonization of the gastrointestinal tract due to the addition of nutrients and have the advantage of adhesion in the intestinal villi as they dominate these sites of the intestinal layer and play an important role in supporting digestion and absorption and the exclusion of pathological species This explanation supports the role of Bacillus subtilis isolated from the intestines of grass carp fish in this research, noted **Li *et al*. (2021)** improvement in growth and production performance as a result of the use of probiotics in Olive flomnde fish diets. The effect of yeasts

Weight gain

The results of the statistical analysis shown in (Table, 5) showed a significant superiority of the second treatment over all treatments and throughout the trial periods. 4.4 g/d compared to the control treatment with a total increase 19 g/d followed by each of the third and fourth treatments with a total weight increase (23.8, and 22 g/d) and it was superior to the control treatment in terms of weight gain, and so that the second, third and fourth treatments were Superior to the control treatment, but the best results were in favor of the second treatment, whose diet contained 10% of the rumen contents, supplemented with Thepax yeast 2 g / kg.
And it is noted from the mentioned that this weight increase decreases for the third and fourth treatments with additives (15 and 20% /kg of feed) content of cow rumen to the diets of this type of fish, but this increase in weight remains higher than what is found in the weight increase in the control treatment, which amounted to (19 g/fish).

This weight gain has decreased in some periods, as it is in the period 56 d due to turning off the heating devices during the high air temperature, and the weight gain has become significantly high during the period 96 d due to conducting a digestion experiment within it, which is 7d, digestion developed in the experimental fish, and the aquarium water heaters were restarted for the same period.

Table (**5) :** Weight gain rates of grass carp fish fed on diets supplemented with rumen content treated with Thepax yeast by 2% (standard ± error)

	Experiment Periods (d)							
Treatment	14	28	42	56	70	84	96	Weight gain Total(g)
T1	3.4 ±0.46 D	0.8 ±0.46 D	1.5 ±0.03 D	1.4 ±0.26 D	3.5 ±1.03 D	1.3 ±0.17 D	7.2 ±0.11 D	±19.00 0.5 D
T2	4.4 ±0.29 C	3.3 ±1.15 A	2.7 ±0.46 A	2.9 ±0.74 A	3.3 ±0.33 A	4.4 ±1.63 A	11.3 ±0.36 A	±33.00 0.57 A
T3	5.2 ±0.41 A	1.6 ±0.70 C	2.6 ±0.89 B	1.6 ±0.66 C	1.8 ±0.42 C	1.3 ±0.33 B	6.4 ±2.56 B	23.80 0.43 B
T4	4.5 ±0.29 B	4.0 ±0.05 B	2.6 ±0.56 C	2.0 ±0.26 B	2.3 ±0.32 B	1.03 ±0.54 C	6.00 ±1.15 C	±22.00 0.57 C
morale level	*	*	*	*	*	*	**	**

The results that the superiority obtained in the second, third and fourth treatments in terms of weight gains, and the second treatment with the addition of 10% of the contents of the rumen of cows to the diet of grass carp fish has achieved the best weight increases, which may be attributed to the contents of the rumen and the high percentage of starch 30 % in it according to the chemical analysis of the contents and the role of the prebiotic, Thepax, which increases the dissolution of sugars into simple forms, which facilitates their absorption in the bloodstream, as yeasts increase the absorption of glucose sugar after the breakdown of carbohydrate chains associated with other elements, and also increase its absorption, availability and processing into the blood in a way Free radicals are an important factor in many vital activities such as digestion, The superiority of the second, third and fourth treatments in terms of body weights of grass carp fish may be due to the addition of intestinal microorganisms to aquatic organisms that have a decisive effect on the host and may be properly used within the diet as probiotics. **Wu *et al.* (2015)** An improvement in growth and production was observed when the effects of probiotics added to the diet of fish (*Ctenopharyngodon idellua*) were evaluated. The reason may be the role of yeast in the representation of amino and fatty acids in the improvement of the body weights of grass carp fish, and this was confirmed by **Liu *et al.* (2018**) when yeasts were added to the diet of grass carp fish, the result was reflected in growth performance and improvement in health and vitality of the fish. The diet of aquatic organisms, including fish, improves growth, health, and disease resistance due to the colonization of beneficial bacterial species in the digestive tract of fish. absorption, and growth, **Ringo *et al.*(2010)** showed that the yeasts and biological precursors included in the diet of aquatic organisms, including fish, improve growth, health and disease resistance due to the colonization of beneficial bacterial species in the digestive tract of fish

Relative and qualitative growth rates

Each relative and specific growth rate is the most widely used in fish experiments. The relative growth calculates the weight gain relative to the initial weight, the number of times the final weight is doubled, and the specific growth calculates the weight gain relative to the rearing period.

The results showed in(Table, 6) that weight of the fish (the second treatment) in the experiment increased by 82% of the initial weight 40 g, while the third and fourth treatments increased (55 and 99% of the initial weight), and this increase is for the second, third, and fourth treatments. Relative to the primary, they are all higher than the relative rate in the control treatment, which amounted to 47% of the initial weight .The results of the statistical analysis showed a significant superiority ($p<0.01$) for the second treatment over all treatments, followed by the third and fourth treatment for all periods of the experiment. The best relative growth rate was It amounted to 7.91 and 18.46 % for the second treatment within the experimental period 70and 96/ d compared to the control rates for the same mentioned periods and amounted to 2.6 and 13.9 g**.**

Table (6) : The qualitative rate and the specific rate of grass carp fish fed on diets to which the contents of cow rumen are added in different proportions per 1 kg of feed treated with Thepx yeast at a rate of 2% for each feed. The average ± the standard error**.**

Experiment Periods(d)								**The qualitative rate**	**The specific rate**
Treatment	14	28	42	56	70	84	96	Final(%)	Final(%)
`T1	0.59 ±0.07 D	0.13 ±0.06 D	0,26 ±0.05 D	0.26 ±0.03 D	0.52 ±0.15 D	0.18 ±0.02 D	0.93 ±0.01 D	0.69 ±0.01 D	47.00 ±1.44 D
T2	0.75 ±0.04 C	0.50 ±0.17 A	0.34 ±0.13 A	0.40 ±0.10 A	0.53 0.27 A	0.53 ±0.19 A	1.21 ±0.05 A	1.07 ±0.01 A	82.00 ±1.44 A
T3	0.87 ±0.06 A	0,24 ±0.10 B	0.39 ±0.13 C	0.23 ±0.09 C	0.64 ±0.26 B	0.17 0.04 B	0.77 ±0.32 C	0.83 ±.01 B	59.50 ±1.44 B
T4	0.76 ±0.04 B	0.06 ±0.08 C	0.40 ±0.08 B	0.30 ±0.03 B	0.55 ±0.13 C	0.05 ±0.04 C	0.99 ±0.15 B	0.78 ±0.01 C	55.0 ±1.44 C
morale level	*	*	*	*	*	*	*	**	**

The results of the statistical analysis showed that the superiority of the second treatment in terms of the qualitative rate of grass carp fish fed on a diet containing 10% of the contents of the rumen of cows supplemented with 0.2 % / kg of feed from Thepax yeast has been superior, at a specific rate of 1.07 g / d, over all fish in the treatments whose specific rates reached 0.78 and 0.83 g/d in the different percentages of addition to diets that contained 15%, 20% of the rumen contents compared to the control treatment, followed by the third and fourth treatment, respectively, compared to the control rate of 0.69 g/d.

It is noted from the results that the superiority in the characteristics of the relative and qualitative growth rate of grass carp fish in the second, third and fourth treatments may be due to the use of diets that contained different proportions of the contents of the rumen and the prebiotic thepax, as they contain amino acids such as lysine, methionine, and carbohydrates (starch), and the contents are considered a food substance It includes various grains and grasses, as well as providing important materials for the growth of beneficial bacteria. This is because the contents are similar to the prebiotic in its components, and fortifying the diet with Thepax precursor has improved its value and the release of important nutrients through lactic fermentation and the diversity of beneficial bacteria in the gastrointestinal tract, This is shown by **Agbabika *et al.* (2012)** that the contents of the rumen contain carbohydrates, fiber, amino acids, important minerals, calcium, phosphorus, and nutritional inhibitors such as phytic and tannic acid, but its value can be improved as a fodder by treating with enzymes or fermenting it in anaerobic conditions, or adding some materials to it, such as blood powder.

Perhaps the microbial diversity in the canal, which greatly helps in the dissolution and simplification of the feed material, and the yeast works by containing beta-glucan fibers, bread yeast extract, and mannan sugar (a monosaccharide whose formula $C_6H_{12}O_6$ is an isotope of glucose, which aggregates to form cocci of mannans, which are found in yeasts and bacteria and enter into The composition of the cellular envelopes of the mentioned microorganisms) as

it stimulates the growth of beneficial bacteria such as lactic acid bacteria to adhere to the epithelial layers of the intestinal wall and increases the thickness of the mucous layer of the intestine and increases the colonization of bacteria in the intestines of fish. In the mucous layer of the canal, it has a positive effect on growth and provides biological precedents for food storage, as its wall is composed of beta-glucan and mannan sugar, which are important in feeding the intestinal flora, and enzymes secreted upon its decomposition, nucleotides and vitamin B12, which is important in the digestion process **(Huebner *et al.*, 2007).** The superiority in productive traits such as weight increases in the body of fish and other characteristics such as relative and qualitative rates may be attributed to the microbial diversity in the gastrointestinal tract, which helps greatly in the dissolution and simplification of the feed material and enhances the activity of bacteria due to the role of the prebiotic that contains beta-glucan fibers, bread yeast extract and mannan sugar. Its monomeric formula $C_6H_{12}O_6$ is an isotope of glucose. It aggregates to form coccobacillus mannans, which are found in yeasts and bacteria and enter into the composition of the cellular envelopes of the mentioned microorganisms. The same and increases the colonization of bacteria in the intestines of fish, and the earlier the colonization of microorganisms, the better the dominance of beneficial bacteria have the advantage of adhesion in the crypts of the mucous layer of the intestine And the exclusion of pathological species, and the provision of biological precedents food storage for the growth of bacteria, being very It contains beta-glucan and mannan sugar, which are important in nourishing the intestinal flora, enzymes secreted upon degradation, nucleotides, and vitamin B12, which is important in the digestive process.

Breves *et al.* (2001) mentioned that the prebiotic increases the simplification of complex carbohydrates into simple sugars that are easily absorbed in the bloodstream. The readiness of amino acids and the availability of mineral elements such as calcium and phosphorus increase as a result of the prebiotic treatment, and thus an increase in the number of musculoskeletal cells of fish, as well as the work of yeasts in stimulating Important enzymes in the gastrointestinal tract, such as amylase, protease, and lipase (**Bongers &Van den Heuvel, 2009).** It is noted that all treatments in this study had significant differences from the control treatment, as it outperformed them in the characteristics of growth standards such as weight gain and a relative and qualitative growth coefficient, but the distinction in superiority was in favor of the second treatment, which contained 10% of the contents of the cow's rumen fortified with Thepax yeast 2 g/ kg of fodder, may be attributed to the low percentage added from the rumen content of 10% of the diet, while the discrepancy between the second, third and fourth treatments, which came in order according to the percentages of adding the contents of the rumen, can be attributed to the increase in the proportions of fiber in the contents and inhibitory substances such as phytic and tannic acids, as they are substances It inhibits interactions and disintegration of carbohydrates, in addition to decreasing its energy value.

Agbabika *et al.* (2012) stated that the contents of the rumen contain carbohydrates, fibers, and inhibitory substances such as phytic and tannic acids, but its value as a fodder can be improved by treating with enzymes, the reason may be the improvement in the value of the feed provided as a result of the action of Thebax yeast and the growth of a variety of beneficial microorganisms that inhabited the digestive tracts, as well as the value of the rumen content of proteins, carbohydrates and vitamins such as B12, explained **Elfaki & Abdelatti (2016)** improving the nutritional value of the rumen content by enzymatic treatment or fermentation such as silage. rumen content can also be added to diets at different levels depending on the speciesthe animals. it can be used as a cheap energy and protein source while reducing feed cost and environmental pollution. the study concluded this rumen content can be introduced

into the diet of animals without adverse effects on diet and general acceptance and without adverse. These studies were applied to animals such as rabbits, poultry and fish, and concluded that the contents in general contain Inhibitors such as phytic acid and tannic acid and the ratios of inhibitors differ between ruminant animals such as sheep, cows and buffaloes, and their value can be improved through treatment with enzymes and the addition of some materials such as blood powder.

In a similar study to **Al-Janabi *et al.* (2021)** in which bread yeast was used at a rate of 0.5 g/kg with Thepax yeast added to the diet of regular carp fish at rates of 0.5 g/kg feed, it showed superiority in somatic growth parameters. In the same context, Thepax yeast was added at a rate of 0.5 g/kg with a mixture of Probiotics at a rate of 0.25 g/ kg was superior in the characteristics of growth standards as well. One of the reasons that explain the growth of this type of grass carp fish is that yeasts (bread yeast) increase the release of nutrients and raise the proportion of protein in the body, and this opinion was confirmed by **Sagada *et al.*(2021)** who used the probiotic with selenium added to black bream fish diets, as he noticed an improvement in the growth and production performance of these fish.

with probiotics on the growth characteristics and survival rate of silver carp was in a study by **Adineh *et al.* (2011)** in which bread yeast was used with probiotics.

CONCLUSION

The use of the contents of the rumen of cows treated with Thebax yeast gave the best results in growth parameters, weight gains and relative rates of grass carp fish, and this is that the addition reached a large extent of the feed ration and based on this percentage of the addition the costs of the rations can be significantly and economically reduced as It is known that these wastes are thrown with the garbage of no value, and we have harnessed scientific effort in this field and reduced the costs of diets.

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