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تأثير تغذية بعض المخلفات الحقلية على :
ب. صورة البروتوزوا فى كرش الأغنام

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تمت دراسة تأثير تغذية الأغنام ببعض المخلفات الحقلية على صورة بروتوزوا الكرش لهذه الحيوانات ، وقد وجد أن حركة البروتوزوا كانت محدودة والعدد الكلى قليل نسبيا فى سائل كرش الأغنام المغذاه على قش القصب وعروش البصل الأخضر عنها فى سائل كرش الأغنام المغذاه على سيقان الفول الأخضر حيث كانت حركة البروتوزوا واثية وشديده والعدد الكلى أكثر منه فى باقى المجاميع ، هذا وقد لوحظ سياده مجاميع الأوليوتريكا فى جميع الحالات التى فحصت حيث مثلت بالانتوه نيم ، الدبلود نيم والبوليبلاسترون الى جانب الافروسكولكس ، أما مجاميع الهوليتريكس فكانت الأقل فى جميع الحالات التى فحصت حيث مثلت بالابزوتريكا ، والداسى تريكا وقد لوحظ تفوق الابزوتريكا على الداسى تريكا فى جميع الحالات .

ويمكن أن نستخلص من هذه الدراسة أنه للاستفاده من هذه المخلفات الحقلية فى تغذية الأغنام ينصح أن يقدم قش القصب كعليقة مائه مع كمية كافية من العليقة المركزه . بينما تقدم عروش البصل الأخضر بكميات قليلة بجانب قليل من العلائق المائه المركزه .

THE EFFECT OF FEEDING POST HARVESTING REMNANTS ON
B- SHEEP RUMEN MICROFOUNA
(With 3 Tables and 6 Figures)

By

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SUMMARY

24 balady ewes 3-5 years old were experimented on to study the effect of feeding some post harvesting remnants namely sugar cane straw, green broad beans stems and green onion stems on rumen microfouna. The species of both genera Oligotricha and Holotricha were studied. Oligotricha species predominate in number, Holotricha in all investigated ruminal juices.

The study showed that feeding sugar cane straw and green onion stems lead to significant decrease in the number of protozoa with limitation in their movement if compared with those found in sheep fed green broad beans stems.

INTRODUCTION

Rumen ciliate protozoa play a significant role in metabolism, nutrition and performance of the ruminant host (ABOU-AKKADA, 1965). The rumen protozoa belong to the two main genus Oligotricha and Holotricha (HUNGATE, 1966). The species diplomidium, Entodinium, Polyplastron and Ophroscolex belong to the genus Oligotricha, while the species Isotricha and Dasytricha belong to the genus Holotricha. Entodimia are generally reported as the most predominant species in the rumen as they constitute about 92.5% of the whole protozoal population (GUTIERREZ ET AL., 1962). CHRISTIANSIN ET AL., (1964) showed that, not only the type of food affects the rumen protozoa but also its amount, level of feeding, frequency of feeding and its nature. The number of the protozoa in the rumen is higher on a good balanced ration than in poor or scanty one (HUNGATE, 1966).

Oligotricha seem to fit with starchy food (BOUNDET ET AL., 1962), while Holotricha proliferate on feeding hay or roughages rich in soluble sugars except lactose and mannose and Dasytricha attack galactose and cellulose (HUNGATE, 1960). CLARKE (1956), stated that the fluctuation in the total number of Isotricha appeared to be related to the diet and dietary regime of the host.

The aim of the present investigation is to study the effect of feeding post harvesting remnants on sheep rumen microfouna as a reflection of the healthy condition of the animal.

MATERIALS AND METHODS

The investigation was carried on 24 balady ewes 3-5 years age. Pre-experimental period extended for 3 weeks where animals were subjected to clinical as well as laboratory examinations to ensure a sound physiological activities. Experimental period extended for 30 days. The animals were divided into 3 groups. The ration given, the system of feeding and the scheme of sampling are shown in the following table.

Groups	Given post harvesting remnant	System of feeding	Interval between sampling	Time of sampling post feeding
No. I	Sugar cane straw	Ad libitum	10 days	5 hours
No. II	Green broad beans	Ad libitum	10 days	5 hours
No. III	Green onion's stems	Ad libitum	10 days	5 hours

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Ruminal juice of sheep was gained by the help of stomach tube and vacuum pump by the method cited by EL-SEPAI (1974). Microscopic examination of the protozoa was conducted as cited by EL-SAIKI (1969). Counting of the protozoa was carried out as described by NAGA (1967). Identification of rumen protozoa was obtained according to NEVEU-LAMARIE (1934) and HUNGATE (1966).

RESULTS

The total numbers and percentages of rumen protozoa are represented in Tables 1, 2 & 3 respectively. Obtained protozoa are shown in Fig. 1, 2, 3, 4, 5 & 6. As already seen, feeding the sheep with sugar cane straw, or with green onion stems induced a sluggish character in the movement of protozoa and their number was relatively lower than those fed green broad beans stems (Table 1). Oligotricha in all examined cases were predominant, while Holotricha were the least in number (Table 1). Entodinium species increased in sheep of group II and were low in group I and III (Table 2). In addition Diplodinium was higher in groups II and III than in animals of group I. (Table 2). Polyplastron was found in all examined cases ranging from 0.2-3.79% (Table 2). Ophryscolex constitute the highest percentage among other microfauna (1.57%) in group II, while in group III it reached 0.2% only and in group I (1.09%) (Table 2). Isotricha was higher (13.06%) in group I and (12.1) group III than in group II (4.32%) (Table 3). Dasytricha were significantly lowered in group II while they reached their highest percentages in group III (6.02%) and I (5.86%) respectively.

TABLE (1)

Total number of ruminal protozoa in sheep fed on some post harvesting remnants.

Groups No.	Post harvesting remnants	Total number ($\times 10^3/\text{ml}$)	Oligotricha ($\times 10^3/\text{ml}$)	Holotricha ($\times 10^3/\text{ml}$)	Motility
I	Sugar cane straw	113	92	21	Sluggish
II	Green broad bean's stems	413	388	25	Motile
III	Green onion's stems	311	253	58	Sluggish

TABLE (2)

Percent of Oligotricha in relation to total protozoal population in sheep fed on different post harvesting remnants.

Groups	Post harvesting remnants	Composition			
		Ent.	Dipl.	Poly	Ophry.
I	Sugar cane straw	69.28	6.91	3.79	1.09
II	Green broad-bean's stems	76.85	14.17	1.02	1.57
III	Green onions stems	70.7	10.46	0.2	0.2

Ent.: Entodinium Dipl.: Diplodinium Poly.: Polyplastron Ophry.: Ophryscolex.

TABLE (3)

Percent of Holotricha in relation to total protozoal population in sheep fed on different post harvesting remnants.

Groups No.	Post harvesting remnants	Composition %	
		Isotricha	Dasytricha
I	Sugar cane straw	13.06	5.86
II	Green broad-bean's stems	4.32	1.9
III	Green onion's stems	12.1	6.02

FEEDING POST HARVESTING REMNANTS

DISCUSSION

The study of the effect of food ingredients on ruminal microfauna is of major economic importance in Egypt. In this respect utilization of post harvesting plant remnants has been studied in this investigation. On the basis of our results, it seems that changes in food eventually causes significant changes in microbial activity especially the ruminal microfauna. Concerning the total number of rumen protozoa as a result of these remnants, our results agree with the view of HUNGATE (1966) who stated that higher number of rumen protozoa is related to balanced ration than poor or scanty one. NOUR (1976) concluded that Oligotricha constituted normally about 94.85% of the whole rumen protozoa in sheep while Holotricha about 3.85%. In the investigated cases Entodinia species were the most predominant ones among the species of genus Oligotricha. This agrees with the results obtained by GUTIERREZ ET AL., (1962). At the same time Diplodina species were relatively increased in number in the ruminal juice if compared with the normal values of the balanced ration. These data agree with the view of SCHULZE (1924) in that, Diplodina are relatively higher in number in ruminal juice of animals fed on diet rich in cellulose. Concerning the rest of species of genus Oligotricha Polyplastron and Ophroscolex were present in all groups in relatively small percentages of the whole protozoal population. The presence of such species is necessary to act as cellulose digester in the rumen (ABOU-AKKADA ET AL., 1963).

Holotricha were found to be relatively higher in sheep fed sugar cane straw and green onion stems than those fed green broad beans stems. This agrees with the suggestion of WARNER, (1962) who stated that Holotricha are often found in high concentrations in animals fed on roughages rich in soluble sugars. Concerning the species of Holotricha the present investigation showed that Isotricha constituted the most of Holotricha while Dasytricha were present in a lower percentage. These results coincide with HUNGATE (1966) who concluded that Holotricha proliferate on feeding roughages and soluble, sugar except lactose and mannose.

It could be concluded that not only the type of ration affects rumen protozoa, but also its quality. However, duration of feeding in our experiment (30 days) did not significantly affect rumen protozoa. Furthermore, sugar cane straw can be used as bulky food for sheep if it is supplemented with feeding stuffs relatively high in its protein content. Green onion's stems can be given to sheep but in small amounts with other roughages and concentrates.

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Fig. 1: A cell of entodinium,
stained with Mallory
stain. Oil immersion.
Mag. 100 x.



Fig. 2: Diplodinium species,
stained with Mallory
stain. Oil immersion
Mag. 1250 x.

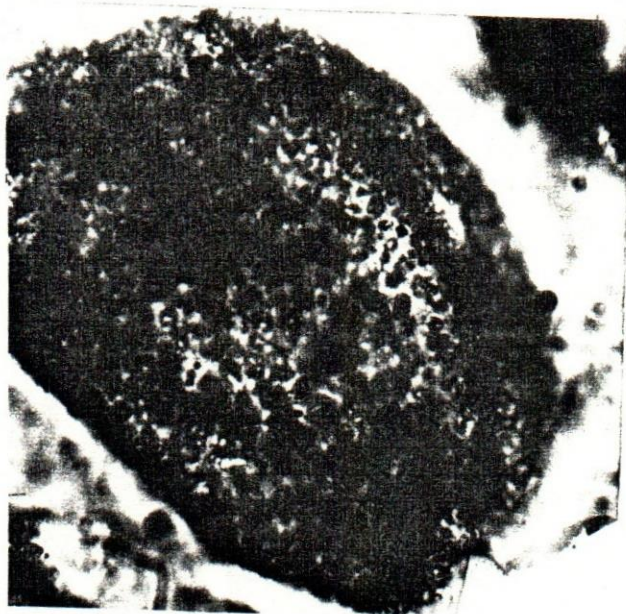


Fig. 3: Polyplastorn, wet prepara-
tion stain with iodine.
Mag. 400 x.

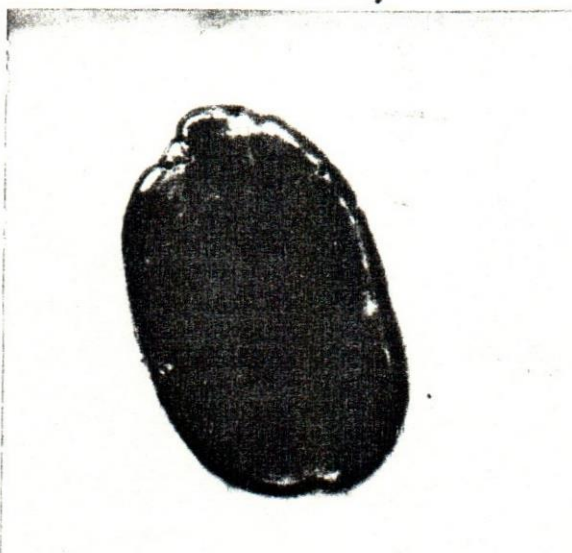


Fig. 4: Ophroscolex, wet
preparation stained
with iodine.
Mag. 500 x.

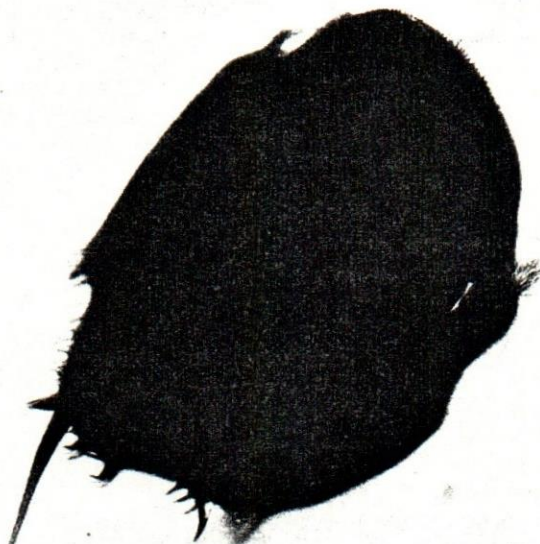


Fig. 5: Isotricha, wet
preparation, stained
with iodine.
Mag. 400 x.



Fig. 6: Daystricha, wet
paration, stained
with Mallory stain.
Oil immersion.
Mag. 1000 x.

