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# LIST OF ABBREVIATIONS

| | |
|---|---|
| ADF | : Acid detergent fiber |
| ADL | : Acid detergent lignin |
| A.O.A.C | : Association of Official Agriculture Chemists |
| CF | : Crude fiber |
| CFM | : Concentrate feed mixture |
| CP | : Crude protein |
| d | : Day |
| DCP | : Digestible crude protein |
| DM | : Dry matter |
| EE | : Ether extract |
| FCM | : Fat correct milk |
| g | : Gram |
| hr | : hour |
| hrs | : hours |
| L | : Liter |
| IVDMD | : In vitro dry matter digestibility |
| IVOMD | : In vitro organic matter digestibility |
| Kcal | : Kilocalorie |
| Kg | : Kilogram |
| L.E | : Egyptian pound |
| LE | : 1 pound Egyptian currency = 100 piasters |
| mg | : milligram |
| ml | : milliliter |
| N | : Nitrogen |
| NA | : Nitrogen absorption |
| NB | : Nitrogen balance |
| NBA | : Nitrogen balance absorption |
| NBI | : Nitrogen balance intake |
| NDF | : Neutral detergent fiber |
| NFE | : Nitrogen free extract |
| $NH_3$ | : Ammonia |
| $NH_3$-N | : Ammonia nitrogen |
| NI | : Nitrogen intake |
| NPN | :Non protein nitrogen |
| NRC | : National Research Council |
| OM | : Organic matter |
| OMD | : Organic matter digestibility |

| | |
|---|---|
| pH | : Minus log of hydrogen ion potential |
| R | : Ration |
| SNF | : Solid not fat |
| TDN | : Total digestible nutrients |
| TP | : True protein |
| TS | : Total solid |
| TVFA's | : Total volatile fatty acids |
| VFA | : Volatile fatty acids |
| W | : Weight |
| YC | : Yellow corn |
| CS | : Corn silage |
| PNS | : Peanut silage |

# SUMMARY AND CONCLUTION

This study was carried out at Noubaria Experimental Station, affiliated to Animal Production Research Institute, Agricultural Center, Ministry of Agriculture; to investigate the effect of corn silage without ears, peanut stover silage and their combination with or without inoculants treatment in order to produce good quality silage for dairy cattle.

Six silages were examined for their quality; corn silage without ears (CS); CS treated with inoculants (CS+B); peanut stover silage (PNS); PNS treated with inoculants (PNS+B); CS + PNS (1:1) and CS + PNS +B (CPN+B). Concentrate feed mixture (CFM) contained around 16% CP was used with each of the previous silages to formulate the six experimental rations. Three adults rams (45 kg in average) were used in digestibility trials, while three other females fitted with rumen fistula were used in situ trials. Eighteen Holisten Fresian cows were used in the lactation trials.

The obtained results can be summarized as follows:-

## a) Silage quality

All studied silages were considered as good quality silage, as pH value ranged from 3.96 to 4.15, with an increase in lactic acid, decreased acetic and butyric acids and concentrations of ammonia-N and TVFA. Decreased CP content by about 1-2 units and had less contents of EE, NFE, NDF, ADF, Cellulose and hemicellulose with an increase of ash content. However, silages contained PNS has always more CP content than other silages.

## b) Digestibility trials

1. Less digestibility coefficient for most nutrients of PNS than CS or their combination were observed, the latter had more digestibility coefficients than CS or PNS with significant differences.

2. No significant differences were found for CFM or different silages intake among sheep, while the differences were significant with CS without treatment (1444, g/h/d), followed by treated CS (1434.40, g/h/d). Mixtures of silages resulted in higher daily feed intake by sheep (1393.75 and 1388.73, g/h/d) compared with PNS (1338.45 and 1347.66, g/h/d) with insignificant differences.

3. No significant differences of TDN values were foud among rations, it ranged from 58.19 to 62.70 %, for treated PNS and treated CS, respectively. DCP values were significantly differ; higher ($P<0.05$) DCP was found with treated PNS ration (9.35 %) and untreated (9.52 %), and their combinations with CS, while lower DCP value was obtained with CS (7.07 and 7.35 %0 which reflect on CPI as well.

4. All rations sheep showed positive NB, ranged from 4.56 to 4.72 (g) for untreated and treated CS, where untreated and treated PNS recorded 7.39 and 7.92 (g), and about 6.64 and 6.68 (g) for their combinations with significant differences. Higher ($P<0.05$) nitrogen utilization was obtained with ration contained treated PNS expressed as NB/NA (36.64 %).

### C) Rumen fermentation

1. Ruminal ammonia-N concentrations and rate of production were increased to reached higher level at 3 hrs post feeding, then it decreased with advancing of sampling time. Higher ($P<0.05$) ruminal

ammonia-N concentration was recorded with untreated PNS rations (15.69 mg/100 ml RL), and treated PNS (15.90 mg/100 ml RL). While higher ($P<0.05$) rate of production was found with treated PNS containing ration (3.65 mg/100 ml/hr) without significant differences among rations. It was noticed that sheep fed untreated CS recorded lower ($P<0.05$) ruminal ammonia-N concentrations and rate of production.

2. Same trend was observed for concentration and rate of production of TVFA, where higher ($P<0.05$) TVFA concentration (11.96 mg/100 ml) was obtained for PNS ration. Lower ($P<0.05$) concentration (10.64 mg/100 ml) was recorded for CS containing rations. While higher ($P<0.05$) rate of production was recorded with PNS ration as well (3.84 mg/100 ml/hr) and lower ($P<0.05$) rate was found with untreated CS (2.82 mg/100 ml/h).

3. All sheep fed experimental rations contained treated PNS showed insignificant different in their rumen volume, as well as among sampling times. Sheep fed ration contained treated PNS showed more rumen volume (3.84 L) compared to other ration, while those fed untreated CS ration was the less one (3.41 L).

4. Higher ($P<0.05$) ruminal rate of out flow was found for sheep fed untreated CS ration (6.60 %/hr), while less ($P<0.05$) rate was recorded for sheep fed untreated PNS ration (6.05 %/hr).

5. Insignificant differences were detected among sheep before feeding experimental rations for their rumen digesta, it was decreased with advancing of sampling time, as it was less at 3 hrs post feeding and more less at 6 hrs post feeding. In general, rations contained PNS had more rumen digesta, they had 4.02 and 4.24 (Kg) for untreated and treated PNS rations. Less ($P<0.05$) weight was observed for untreated

and treated S rations (3.58 and 3.36, Kg, respectively), while the mixtures had intermediate weight (3.74 and 3.87, kg).

**D) Lactation trials**

Cows fed rations contained BNS had showed more ($P<0.05$) milk (15.10, 15.15 and 15.15 Kg/d) and 4% FCM (11.36, 10.76 and 10.90 Kg /d) compared with those fed CS containing rations. CS ration showed the lower milk yield (13.57 and 14.17, kg/d) and 4% FCM (10.21 and 9.97, Kg/d). The same trend was found with fat yield especially with cows fed inoculated PNS (500, g/d) and protein yield, especially with those fed untreated PNS (462, g/d). From the economic point of view, cows fed mixture of silages had more profit (LE 6.949 and 6.453, respectively), followed by cows fed CS (LE 6.310 and 6.4940. While PNS rations were less profit (LE 4.988 and 5.114).

It can be concluded from this study that mixing corn stalks with peanut hay in order to make silage can be advice to be good silage for animal nutrition, especially for dairy cattle. This due to the its feeding values as well as good cash return feeding system.